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Annual Report

OF THE

SECRETARY FOR AGRICULTURE,

NOVA SCOTIA

FOR THE YEAR 1912

HALIFAX. N. S.
Commissioner Public Works and Mines,
Kings Printer,
1913.

T. C. ALLEN & CO., PRINTERS, HALIFAX, N. S.

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AGRICULTURE.

REPORT OF THE SECRETARY FOR AGRICULTURE FOR THE YEAR 1912.

The Honorable George H. Murray,
Provincial Secretary.

Sir:—In accordance with the requirements of the Act for the Encouragement of Agriculture, I have the honor to submit my Annual Report for the year 1912, which contains a statement of the work done during the year under the provisions of the Act and by authority of his Honor, the Lieutenant Governor-in-Council.

This Report embraces the following documents:

Part I.—My Annual Report, as Secretary for Agriculture for Nova Scotia. Pp. 1.

My Report as Principal of the Agricultural College, Truro, being the eighth Annual Report of the Nova Scotia Agricultural College and Farm. Pp. 14.

Report of the Professor of Botany. Pp. 21.

Report of the Provincial Entomologist and the Professor of Zoology. Pp. 23.

Report of the Professor of Horticulture. Pp. 26.

Report of the Farm Superintendent and Professor of Agriculture. Pp. 39.

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Part III.—Report of Agricultural Societies, Associations, Exhibitions, Meetings, Drainage, and Field Crop Competitions. Pp. 1 to 84.

I have the honor to be Sir,

Your obedient servant,

M. CUMMING,
Secretary for Agriculture.

Truro, Feb. 1st, 1913.

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PART I.

AGRICULTURE.

REVIEW OF THE WORK OF THE AGRICULTURAL DEPARTMENT OF THE GOVERNMENT OF NOVA SCOTIA.

The Honorable George H. Murray,
Provincial Secretary,
Halifax, N. S.

Sir:—I have the honor to submit the report of the Department of Agriculture for the year 1912. It consists of three parts, as follows:

Part 1.—Contains the General Report of the Secretary for Agriculture including the Character of the Season, The Crops, Live Stock, A resume′ of the Work of the Various Farmers' and Fruit Growers' Associations and Societies, and a Brief Outline of the Reports of the Members of the Agricultural Staff who are held responsible for the administration of the various Departments of the work. In this part, will also be found reports of the members of the staff of the Agricultural College, whose statements include, in addition to the work at the College, the extension work which has been carried on throughout the Province. It should be explained to those, who are not familiar with our organization, that the members of the Agricultural College faculty are also Provincial officers administering the work of their special departments in the Province.

Part. 2—Contains a series of educational articles on "Swine Breeding in Nova Scotia." This series is a continuation of the series of articles upon various topical subjects which was commenced in the year 1907.

Part 3.—Contains the report of the Superintendent of Agricultural Societies and Associations and deals in detail with (a) Agricultural Societies, (b) County Associations, (c) Local Exhibitions, (d) Field Crop Competitions and (e) Operations of the Drainage Machine.

The Season of 1912.

The season of 1912 opened somewhat earlier than 1911. Seeding in the vicinity of Truro began on May 2nd, and on all farms where the drainage conditions were good, was well under way throughout the greater part of the Province, before the 20th of May. Up to this time, seeding conditions were favorable, but from May 20th to the middle of June, rains fell frequently, the temperature was fairly low, and consequently, much of the lower and heavier land was not seeded until the latter half of June. From the latter part of June to July 20th little rain fell but, from this latter date to the middle of September, there was a constant succession of rains and much cloudy weather. The result was a cool summer, favorable to the growth of those crops that were well started but very unfavorable to the growth of crops poorly started or on heavy, wet lands. Wet weather prevailed during haying time and consequently much of this crop was poorly cured. The weather however from harvest time to the end of the fall was generally dry and the conditions for harvesting hay and grain and for pulling and digging roots and potatoes and harvesting apples and for fall plowing were nearly ideal. In general the season was free from frost. At Truro, on June 10th there was a little frost in the hollows and a similar condition was repeated on September 7th. The first frost in Truro to destroy vegetation came on September 17th and it was several weeks after this date before destructive frosts touched the crops of the western part of the Province.

Weather Observations.

In the following table we present the rain fall and the maximum and minimum temperatures as determined at Truro by Mr. B. H. Landells, Superintendent of the Drainage and Experimental Department. The temperatures are given in degrees Fahrenheit. For comparison the rain fall of 1911 is included. It should be explained that the rainfall at Truro is lighter than in many other parts of the Province.

MONTH.	Max. Tem.	Min. Tem.	1912 Rain Fall Inches.	1911 Rain Fall Inches.
January	50	–21	3.4	2.89
February	50	–25	2.8	1.95
March	55	–14	2.14	3.19
April	63.5	9	2.32	1.21
May	79	22.5	3.17	.99
June	84	34	2.89	2.75
July	86	40	4.32	1.06
August	81	36	2.93	2.91
September	70.5	29.5	2.51	4.99
October	75	29	1.52	4.24
November	64	21.5	4.26	4.61
December	55	–4	4.86	.52
			37.12	31.31

Farm Crops of 1912.

Throughout the western two-thirds of Nova Scotia, hay was a good crop, being very slightly below 1911 and being estimated at about 88 per cent. of an average crop. In the eastern third of the Province, the yield was very much lower, being estimated at about 72 per cent. of 1911. Oats and other cereals, except on late seeded fields, were extra good. Unfortunately many of the late seeded fields did not mature and this cut down the yield to about 90 per cent. of an average crop. Potatoes and roots, except on heavy low lands were considerably above an average crop, the yield of potatoes being one of the largest in the history of the Province. Pastures were generally considerably above average, especially in the western two-thirds of the Province. Live stock is generally in good condition except in parts of the East where the hay crop and pastures were inferior. Unfortunately, many farmers in this part of the Province are cutting down their stock owing to scarcity of feed and in the western part of the Province many are doing the same in order to enable themselves to take advantage of the unusually high prices that are prevailing for hay.

The conditions in regard to fruit will be discussed in the report of the Professor of Horticulture. It is sufficient to state, here, that, in comparison with the phenomenal year of 1911, that of 1912 appears small, amounting to about 60 per cent. of the previous year. However, even at this, the yield is estimated at about 1,100,000 barrels which is considerably in excess of the yield of any previous year except 1911. It is to be regretted that neglect of spraying has resulted in a very large proportion of spotted apples, which will greatly reduce the value of the year's output.

The following table based upon the acreages as determined by the Dominion Census of 1911 and the Provincial Department returns of yield per acre for 1912 the only changes introduced in regard to acreages are a 4 per cent. increase for potatoes and a 2 per cent. increase for turnips.

	Acres.	Yield Per Acre. Bus.	Total Yield. Bus.
Oats	98,129	36	3,532,644
Wheat	13,326	23	326,498
Barley	5,978	30	179,340
Buckwheat	11,580	28	314,240
Peas	209	21	4,389
Beans	950	21	19,951
Rye	919	22	20,218
Mixed Grains	4,356	33	132,748
Corn for husking	142	40	5,680
Potatoes	29,362	221	6,489,002
Turnips	9,533	580	5,529,140
Mangels	1,123	506	568,238
		Tons.	Tons.
Hay	485,776	1.7	825,819
Corn for forage	621	12	82,42
Other forage crops	1,234	10	12,340
Alfalfa	32	(Experimental)	
Flax	6		
Other Field Roots	1,069		

Apples (about) 1,000,000 bbls.

Agricultural College and Farm.

In our 1911 Report we stated that while progress had been continuously made ever since the opening of the institution, it had been more marked in that year than in any other. The year 1912 has quite eclipsed 1911, especially as regards attendance but also in regard to the progress made in all departments of the institution. A full statement will be found in the subsequent report of the Principal and the members of the staff and no further comment is called for here.

The Nova Scotia Farmers' Association.

The Nova Scotia Farmers' Association made a signal departure from any previous year in holding its annual meeting in Yarmouth the extreme west end of the Province. Hitherto, it has been the custom to hold the annual meeting at some place not far from the centre of the Province, but it was felt that many of the very best members of the Farmers' Association hailed from the eastern and western extremities of the Province and that it was only fair that, from time to time, meetings should be held there as well as in the centre of the Province. The Yarmouth meeting of 1912 was one of the very best in the history of the Association and the members of the Yarmouth County Farmers' Association fully lived up to their record of doing things in a thorough going, businesslike and hospitable style. Following the precedent of 1912, the annual meeting of 1913 will be held in Sydney. A separate report of this Farmers' Association is annually issued and may be had on application to C. R. B. Byran, Secretary of the Nova Scotia Farmers' Association, Durham, Pictou Co., N. S.

County Farmers' Associations.

The constitution of the Nova Scotia Farmers' Association provides for sub associations in the various counties of the Province. Thirteen such County Associations are now in existence and are doing good work. The work undertaken by some of these associations is so important that they could scarcely be dispensed with. These associations report to the N. S. Farmers' Association and an abstract of their report can be found in part 3 of this publication.

The Nova Scotia Fruit Growers' Association.

The Nova Scotia Fruit Growers' Association occupies a prominent place in the development of fruit growing in the Province. While it is a provincial organization, yet the large proportion of the members hail from Annapolis, Kings and Hants Counties. The Annual meeting of 1912 was held in Wolfville on Jan. 15th to 17th and the Annual Meeting of 1913, is advertised to be held at Middleton during the last week of January. This Association has been particularly active during the past year in advising the Department of Agriculture in regard to measures for control of the San Jose' Scale and other insect pests. A report is issued and may be secured on application to M. K. Ells, Secretary Nova Scotia Fruit Growers' Association. Port Williams, Kings Co., N. S.

The United Fruit Companies.

The most important movement among the fruit growers of Nova Scotia, during the past few years, has been the organization of co-operative Fruit Companies of which there are now some thirty-two situated all along the line from Windsor to the western border of Annapolis County. Nearly all these local companies have been combined into a central company known as "The United Fruit Companies." This organization is a purely business organization and does not receive any grant from the Government. It is not, therefore, called upon to report to the Secretary for Agriculture but we are asked so many questions in regard to this co-operative body that we have made this brief reference to it. The United Company will handle approximately half the apple crop of Nova Scotia during the present year. The President is John Donaldson, Port Williams, and the Manager is S. B. Chute, Berwick.

The Experimental Fruit Station, Kentville.

In our last Report, we made reference to the fact that this station had been established and that aggressive work was being started. Since that time, the Dominion authorities, under whose administration this station is conducted, have appointed as its director, Mr. Saxby Blair, a native of Nova Scotia (a son of Col. W. M. Blair), formerly Professor of Horticulture at MacDonald College. The appointment is not only a popular one but gives the public every confidence in the high class work which is bound to be carried on under the administration of so capable a man as Mr. Blair.

Model Orchards.

No new Model Orchards were set out during 1912. The number therefore, remains at thirty-five, established in various centres from end to end of the Province. In no previous year has this important line of work been so thoroughly carried on. A full report will be found in the report of P. J. Shaw, Professor of Horticulture, which appears in a subsequent part of this report.

Meetings.

There were held during the year 223 official public meetings with a total attendance of 10,935 and an average attendance of 49. A comparison with previous reports indicates that a lesser number of meetings have been held. This has been due to the fact that more attention is being paid to demonstration work, etc. and that public meetings are for the most part only being held when there is a special request for them. One hundred and ninety of the above meetings were held under the auspices of the County Farmers' Associations. A full report of this work will be found in part 3 of this publication.

Agricultural Societies.

There are now 205 Agricultural Societies in Nova Scotia, being five more than last year which was the record year up to that time. These societies are gradually dropping slip shod methods and for the most part are endeavoring to do more thorough work. An additional grant of $2000.00 derived from the Federal Appropriation was divided among the societies upon the same basis that the present local grant is divided. Further a fund was provided from this same source from which a bonus of $10.00 was paid to each Agricultural Society which constructed a paddock in which to exercise the stock bulls. Special assistance was also rendered in places where societies had been unfortunate in the purchase of their stock or in the loss of stock after being purchased. For detailed report see part 3.

Exhibitions.

The following exhibitions were held during the year: The Nova Scotia Provincial Exhibition, Halifax, Sept. 11 to 19th; The Maritime Horse Show, Amherst, April 3 to 5; The Maritime Winter Fair, Amherst, Dec. 2 to 5; and twelve county exhibitions including the Nova Scotia Horticultural Exhibition which was held at Bridgetown, Annapolis County, Oct. 2 to 4. Taking them as a whole, the exhibitions have had a larger patronage and have been more successful than in any previous year in the history of the Province. Possibly the most noteworthy success was the Sydney Exhibition, held under the joint auspices of the Cape Breton County Farmers' Association and the Sydney Exhibition Commission. This Commission has spent a large amount in grounds and buildings and the exhibition held last September could be regarded as nothing short of a revelation to those people who have failed to realize the extent to which Cape Breton has been developing agriculturally during thepast few years.

The sending of disinterested and well qualified judges from outside the county by the Department of Agriculture to each of these exhibitions has proven a strong feature in the exhibition policy. In general, there have been more exhibits, larger attendances, more prize money paid out and greater prosperity than in any previous year. We must, however, sound a warning note. All movements have their rises and falls and the history of the past leads us to expect the latter just as surely as the former. We, therefore, think that we are giving wise counsel when we advise the mamagers of the County Exhibitions not to assume too large obligations nor to build too extensive plants, the very continuance and maintenance of which may involve a burden greater than should be borne in future years. In the meantime, however, we cannot but see in the popularity of these exhibitions a further evidence of the lively interest which is being taken in all parts of the Province of Nova Scotia in improved agriculture.

There is room for considerable discussion in regard to the future of the Nova Scotia Horticultural Exhibition, which during the past six years has been held in turn in the Counties of Hants, Kings and Annapolis. There are those who feel that this Horticultural Exhibition would accomplish more, so far as the advertising of Nova Scotia fruit is concerned, if it were held in a large consuming and shipping centre such as Halifax where it would serve not only as a medium of competition in the showing of fruit but also as a medium of advertisement of this valuable industry. While presenting this view, we must at the same time congratulate the local managers in the various towns in which this exhibition has been held upon the splendid success which has attended their efforts. A full report of these exhibitions will be found in part 3.

Field Crops Competitions.

Nineteen hundred and twelve has been, by all odds, the most successful year in the history of these valuable competitions. More prize money was given, the scope of the competitions was widened and the entries were largely increased. In previous years the competitions were confined to the growing of seed oats. In 1912, prizes were added for the growing of wheat and potatoes. There is no question that these competitions are doing much to encourage our eastern farmers in producing their own seed which experience has shown can not only be produced more cheaply than it can be bought but will give more satisfactory results in general than imported seed.

In order to test the quality of seed potatoes produced in this competition several exhibits were forwarded to the Dominion Exhibition, Ottawa, where they were in open competition with exhibits from other parts of the Dominion. Despite the fact that the Ottawa Eshibition was held early in September and that, consequently, the Nova Scotia potatoes were not very well matured, yet they were awarded second and third prizes.

A most interesting competition, the funds for which was provided by a Nova Scotian living in New York, was a Turnip Growing Contest held in Cumberland and Colchester Counties open only to boys under twenty-one years of age living upon farms assessed at less than $3000.00. As an evidence of the character of this competition, we may state that the highest scoring field produced 1375 bushels of turnips equal to forty-one tons which is nearly double the amount of fodder produced in the best field of corn that the writer ever saw. This competition will be continued next year and we advise interested boys to get particulars from Truro as soon as possible. Full particulars of this competition will be found in part 3 of this report.

Drainage.

Interest in the important subject of drainage continues to develop. The Government drainage machine operated during the year in Colchester and Kings Counties. In addition another traction ditcher was purchased by a group of farmers in Pictou County and in accordance with legislation passed in 1912 for the purpose of encourageing drainage, the purchasers of this machine received a substantial bonus from the Government.

The services of Mr. B. H. Landels, of the College staff, which were available at the mere cost of paying travelling expenses, to the farmers who wished advice in laying out drains were largely made use of. For a full report upon the drainage work of the year we refer the reader to Mr. Fuller's statement in part 3 and Mr. Landels' statement in part 2 of this report.

Dairying.

Twenty-seven per cent. more butter was made in the creameries in Nova Scotia in 1912 than in 1911 and in 1911 there was an increase of 30 per cent. over the previous year. This is a very marked increase and is tangible evidence of the development along dairy lines which is taking place in Nova Scotia. Two new creameries were established during the year, one at Yarmouth in Yarnouth County and the other at River Herbert in Cumberland County. Graduates of the Agricultural College are responsible for both of these.

A marked step forward was made in appointing W. A. MacKay Dairy Superintendent for the Province. He has, during the past summer, been in the field nearly all the time and has, in many ways, rendered practical assistance to the butter and cheese makers. A further reference to Mr. MacKay will be found in the Principal's Report in part 2 of this report.

Although the increase in butter is marked, we regret that cheese making has not held its own, due largely to the fact that prices for butter have been so high and that butter making leaves skim milk on the farm and enables the farmer to develop his young stock much better than under a system of cheese making. For a full report in regard to dairying, see the report of the Dairy Superintendent in part 2 of this Report.

Insect Pests.

For a number of years we have been making reports in regard to our campaign against the Brown Tail Moth. We regret to state that during 1912, the presence of an even more insidious pest than the Brown Tail has been discovered, viz: the San Jose' Scale. As soon as the discovery was made, scouts were put in the field and every effort made to discover the boundaries of the pest and to destroy infested trees. In this work the Department of Agriculture received a large degree of assistance from the Entomological Division of the Department of Agriculture, at Ottawa. A full report in regard to the work done in connection with this pest and the Brown Tail Moth will be found in the report of the Provincial Entomologist in part 2 of this report.

As a result of the increasing amount of work in connection with the control of insect pests, a Provincial Entomologist, Dr. Robert Matheson, M. S. A., Ph. D., (Cornell) was appointed and he is now in full charge of the situation. A fuller statement in regard to this appointment will be found in the Principal's report. See part 2.

Acting on the advice of the Nova Scotia Farmers' Association and of Dr. Hewitt, Dominion Entomologist, the Government of Nova Scotia passed on Oct. 25, last, stringent regulations under the provisons of the "Injurious Insect Pest and Plant Disease Act, 1911." for the control of the importation of nursery stock into Nova Scotia. Briefly these regulations require that nursery stock can only be brought in from nurseries in other Provinces of the Dominion which have been inspected between June 16th and September 15th of the preceding year and have been declared practically free from San Jose′ Scale and the other injurious pests mentioned in the above Act. Even after this, such nursery stock must be examined, and if necessary, fumigated by men working under the Provincial Entomologist for Nova Scotia at the ports of Truro and Digby, and any other ports that may be dcelared ports of entry by the Secretary for Agriculture. As heretofore all stock purchased outside of the Dominion of Canada is under the control of Dominion Regulations and must come in through ports specified by the Dominion Government. Those who are interested should refer to the Dominion Entomologist at Ottawa.

Horse Improvement Legislation.

On the 3rd day of May, 1912, an Act For the Encouragement of Horse Breeding in Nova Scotia was passed by the Nova Scotia Legislature. According to this Act, no person, firm or company shall keep any stallion for public service unless the name, description and pedigree of such stallion shall have been enrolled in the Department of Agriculture and a Certificate of such enrolment secured. Stallions will be enrolled in three classes: as follows;

Form A.—Pure Bred. In this class will be enrolled all horses whether Standard Bred, or Clydesdale, Percheron or any other breed that are eligible for registration in the Canadian National Records.

Form B.—Grade. In this class will be enrolled all stallions whose sires are of pure breeding but whose dams are not of pure breeding.

Form C.—Cross Bred. In this class will be enrolled all stallions whose sire and dam are pure bred but not of the same breed or whose sire and dam are neither of them pure bred.

All bills, posters, etc. advertising stallions must contain a copy of the stallion certificate of enrollment.

The fine for contravention of any of the provisions of this Act shall be not more than $100.00 and not less than $25.00.

This Act is along the lines of similar Acts now in force in the majority of the Provinces of the Dominion as well as the States of the Union to the South. Much good has already come from such horse legislation elsewhere and we have every right to expect similar results in Nova Scotia. We appeal to all lovers of the horse in the Province to support the various measures in connection with this Bill.

Special Appropriation from the Dominion Government in Aid of Agriculture in the Provinces.

So far as the organization of the Department of Agriculture is concerned, the most important addition of the year was the contribution of a substantial sum from the Dominion Treasury for the purpose of assisting the Provincial Departments in Nova Scotia and the other Provinces of the Dominion. The amount contributed to Nova Scotia was $34,288.00. While it is generally anticipated that this Dominion Subsidy will be continued and probably to a larger extent in future years, yet the Honorable, the Minister of Agriculture advised myself, as Secretary for Agriculture for the Province of Nova Scotia, that there was no guarantee that this subsidy would be continued and that consequently the appropriation of 1912, should be spent on some special, rather upon than some regular service of the Department. He pointed out that, if this policy were adopted the Provincial Department would not suffer from a failure to continue the Dominion Subsidy to the same extent that it would if the funds were to be used to increase the expenditure of the regularly organized Departments. In Nova Scotia the problem of recommending an important and much needed line for special expenditure was very easy. The Agricultural College had made such great growth during the past few years that new buildings were indispensable and it was felt that no more important use of this Dominion money could be made than in adding to the buildings at this institution. The great bulk of the appropriation was, therefore, devoted to this purpose but, at the urgent request of Mr. F. L. Fuller, some $3000.00 was appropriated for the work of the Agricultural Societies. Two thousand dollars of this was divided pro rata in the same way as the Nova Scotia Government appropriation is divided. The remaining $1000 was used, in part, to assist weak societies, whose circumstances were such as to warrant special aid and to bonus all societies that would construct paddocks for their stock bulls. Some difference of opinion has been expressed in regard to the fairness of the distribution. Whatever may be said in regard to this, Mr. Fuller, the Supt. of Agricultural Societies, and myself take the full responsibility. It is proposed to have this subject fully discussed at the next meeting of the Nova Scotia Farmers' Association and it is hoped that the two exactly opposite lines of criticism may be fairly met and a method of distribution arrived at that will be satisfactory to all.

When the Dominion Subsidy, which, if we may judge from the speech from the Throne, is to be continued, is put upon a permanent basis and the funds made available for use in the regular services of the Department, we will be able to do much more effective work but temporarily will have some difficult problems in arriving at the best lines of work upon which to spend this appropriation. In this connection it is sufficient to say that every Department of our work has been languishing for lack of financial support and the problem will not be one of trying to spend so much money but entirely one of the proper division of the money along the various deserving lines.

Conclusion.

Nineteen hundred and twelve has been a year of progress, but 1913 will see still more progress. There is not a feature in connection with the work of 1912 but in regard to which, we are preparing for an advanced policy in 1913. The importance of agriculture is being recognised as never before and every movement which we have undertaken has received the unqualified support of the citizens of the Province. With the increased subsidy from Ottawa, we will have the means for enlarging the scope of our work in every Department and for opening up new lines. As we review the successes of the past, we cannot refrain from thanking the members of the Government and the citizens of Nova Scotia whom they represent for the splendid support which they have given our every endeavor. We believe that a continuance of their support will result in still greater things, and we therefore solicit not only a continuance of the support of the Government but a still greater manifestation of interest on the part of everyone who has the welfare of Nova Scotia at heart. On behalf of the staff of the Department of Agriculture

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Secretary for Agriculture.

EIGHTH ANNUAL REPORT OF THE NOVA SCOTIA AGRICULTURAL COLLEGE AND FARM.

Sir:—I have the honor to submit the eighth annual report of the Nova Scotia Agricultural College and Farm, being for the year 1912. The report is divided as follows:—

Part 1. Report of the Principal.
" 2. Report of the Professor of Botany.
" 3. Report of the Professor of Zoology and Provincial Entomologist.
" 4. Report of the Professor of Horticulture.
" 5. Report of the Professor of Agriculture and Farm Superintendent.
" 6. Report of the Professor of Field Husbandry and Farm Drainage.
" 7. Report of the Manager of the Poultry Department.
" 8. Report of the Superintendent of Dairying and Lecturer in Dairying.

Part 1. *Report of the Principal.*

My previous reports have been prepared about the last of January, each year, and have included a statement of all classes held up to that date. The present report is, and all future reports will be confined to the actual work conducted during the calendar year up to December 31st.

The Regular Course.

The most important course at the College of Agriculture is the two-years course. I am pleased to report that the enrollment in this course during the semester November to December, 1912 is far in excess of any previous enrollment at the institution.

The actual number is 114 and, as a considerable influx of students is expected at the beginning of the next semester in January, the session of 1912-13 promises to completely overshadow any other session in the history of the College. The highest previous enrollment was that of 1911-12, when the number was 77. Of the 114 students at present at the College, 60 are from Nova Scotia, 26 from New Brunswick, 5 from Prince Edward Island, and 22 from abroad. Of those from abroad, 6 are from the United States, half of these being sons

Regular Students at Nova Scotia Agricultural College 1912-13. Some Members of the Faculty and Agent General Howard in Front Row.

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of Nova Scotia who purpose returning to their native province; 3 are from the West Indies and South America, 1 from Newfoundland, 1 from South Africa, and 12 are from various parts of Great Britain. Several of these latter have, already, purchased properties in Nova Scotia and others are contemplating settling in the Province. These should, strictly, be added to the list of Nova Scotians in attendance at the institution. In connection with this latter statement, I should mention, in passing, that the College is proving a very important factor in the settlement of the lands of the province.

Graduates of 1911-12.

Of those students who attended the College during 1911-12, 21 were awarded the Associate Diploma of the College as follows:—

Brown, C. A., Glasgow, Scotland.
Crooker, C. A., South Brookfield, Queens Co.
Campbell, J. E. Hopewell, Pictou Co.
Christie, A. C., Valley Station, Colchester Co.
Colpitts, E. D., Truro, Colchester Co.
Chisholm, W. M., Loch Lomond, Richmond Co.
Churchill, W. R., Yarmouth, N. S.
Chute, C. E., Waterville, Kings Co., N. S.
Cunningham, H. S., Tatamagouche, Colchester Co., N. S.
Denton, Guy, Rossway, Digby Co., N. S.
Durling, V. B., Lawrencetown, Annapolis Co., N. S.
Dickie, Carl M., Kentville, Kings Co., N. S.
Henry, Cyril G., Kingston, Jamaica.
Johnston, H. A., Newton Mills, Colchester Co., N. S.
Johnson, Myron, Newton Mills, Colchester Co., N. S.
Moore, D. M., Shubenacadie, Hants Co., N. S.
MacDonald, Alex., West Merigomish, Pictou Co., N. S.
Shipton, J. C., Moschelle, Annapolis Co., N. S.
Smythe, W. V., Waterville, Kings Co., N. S.
Schafheitlin, Otto, Canning, Kings Co., N. S.
Stuart, Malcolm A., Belle River, P. E. I.

The Premier Murray cup for the Best Judging of Live Stock was awarded to H. S. Cunningham of Tatamacouche, and the Prince Edward Island Students cup for the Best Judging of Seeds, was awarded to Ora C. Hicks of Peticodiac, N. B.

The January Short Course.

The Short Course of January, 1912 was reported in the 1911 Report and we merely give a resume. The total enrollment was 342. Of these, 99 were from Prince Edward Island, 61 from New Brunswick, 1 from Newfoundland and the balance from the Province of Nova Scotia. Included in this number were 23 ladies, who took the special course provided for them in dairying, horticulture, poultry raising and domestic science. The attendance from Nova Scotia was representative of most of the counties including 25 from the Cape Breton counties, 13 from Antigonish County, 3 from Guysboro County and so on. The new buildings, referred to in a subsequent paragraph, will enable us to accommodate the Short Course students much more satisfactorily than in former years.

The Rural Science School.

The Rural Science School, conducted by the affiliated Agricultural and Normal Colleges, was in session from July 9th to August 9th, 1912. The enrolled attendance was 54, consisting almost entirely of teachers actively employed in their profession who took advantage of a part of their vacation to improve their knowledge of scientific subjects. In order to complete the work of the Rural Science School, a teacher with little scientific knowledge must attend three summer sessions. Several who have had advantage of previous scientific training have completed the course in two summer sessions. Graduates are awarded a Rural Science Diploma which entitles them to an extra Government grant provided they teach, in the schools, elementary science such as the pupil should be familiar with in order to understand the principles underlying agriculture and the other industries. A full report, containing the names of those awarded diplomas, is to be found in the 1912-13 calendar of the Provincial Normal College and in the October Journal of Education.

The Faculty.

Several changes and additions have been made to the faculty during the year.

Mr. E. S. Archibald, B. A., B. S. A., formerly Professor of Agriculture and Farm Superintendent, was appointed on July 1st to the staff of the Dominion Department of Agriculture and to the very important position of Dominion Animal Husbandman. Mr. Archibald was a most efficient member of the staff and we have no doubt will make a splendid success in his new field of work.

Mr. Lionel Stevenson, B. S. A., a graduate of the Ontario Agricultural College, has succeeded Mr. Archibald. Mr. Stevenson is a man of mature experience having for nearly fifteen years managed his father's farm and having acquitted himself with distinction in his course at Guelph. He came with high recommendations and he is living up to them.

N. S. A. C. Short Course, Truro, January, 1913.

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Mr. Robert Matheson, M. S. A., Ph. D. (Cornell), formerly assistant professor of Biology at Cornell was, in October 1912, appointed Provincial Entomologist and Professor of Zoology at Truro. Dr. Matheson is a native of Pictou County, a graduate of the Pictou Academy and of the School of Agriculture, then under the Principalship of H. W. Smith. He has some big problems ahead of him in his endeavors to protect the farmers and fruit growers of the Province from the ravages of destructive insects but his natural ability and his excellent training makes him well qualified for the work.

Owing to recent developements in the creameries and cheese factories of the Province, it was found necessary to appoint a Dairy Superintendent whose services will be available to promote the interests of these factories and to act as lecturer on dairying at the Agricultural College. We were able to make a most fortunate selection in W. A. MacKay, a graduate of the Ontario Dairy School at Guelph and, for three years, the most successful manager of the Scotsburn Creamery in Pictou County. His natural attainments and practical experience, gained in other parts of the Dominion as well as in Nova Scotia, qualify him for carrying on this important line of work in a most satisfactory fashion.

Prior to Dr. Matheson's appointment, Prof. H. W. Smith taught at the College all the classes in Botany, Zoology and Entomology. Under the new arragement, Dr. Matheson will take over the Department of Zoology and Prof. Smith will devote himself entirely to Botany and Geology. This will be very much more satisfactory for both men concerned as it wil enable them to specialise to a greater extent than otherwise and so to do much more efficient work.

As in former years, our teaching staff has been supplemented by the services of L. C. Harlow, Professor of Chemistry at the Normal College, E. W. Connolly, Professor of Mathematics at the Normal College, F. G. Mathews, Principal Manual Training School, Truro, J. E. Barteaux, of the Nova Scotia Technical Education Staff, C. W. MacDougall, Dairy Superintendent for New Brunswick, and Dr. J. Standish, Veterinarian of Ontario. These men are all engaged as teachers for shorter or longer periods and carry on the work in addition to their regular lines of employment. Everyone of them has given efficient service. The time has, however, arrived when, owing to the largely increased attendance, the work taught in these departments must occupy the whole attention of individual men. The Government must therefore be prepared, at no very distant date, to provide the necessary means of carrying out these measures.

Dominion Aid to Agriculture.

In my report, as Secretary for Agriculture, I have referred at some length to the contribution of a special grant of money to the Provinces during the present year by the Dominion Government for the purpose of assisting the Agricultural Departments. This contribution to the Province of Nova Scotia came at a most opportune time in the history of the College. We had outgrown our accommodations and had not room to provide even sufficient class room space for the increasing number of students. The Local Government had recognised this condition of affairs and was prepared to give a substantial grant toward additions to the College. The money, however, was badly needed in other branches of the public service, and when the Dominion contribution was made, it provided the funds required without any embarrassment to the Local Government Treasury. The greater part of the grant for 1912 was spent upon new buildings on the College premises. Aside from the fact that this contribution was a most opportune one, the College faculty appreciate the fact that, in giving the major part of the grant to be spent upon buildings at the Agricultural College, the Dominion Government put its stamp of approval upon the endeavors which we at Truro have been making to promote agricultural education in the East.

New Buildings.

With the money contributed from the Dominion Treasury and an additional grant from the Local Government, we have during 1912 had the following new buildings constructed on the College premises: 1st, An ell 80 x 60 with two stories and a basement was added to the main building. The main feature of this ell is an Assembly Hall with a seating capacity for 750. The former Assembly Hall seated 400 people, and at the time of its construction, was thought to be ample for any needs of the College. It did not, however, begin to provide the necessary accommodations during the session of 1911-12. But, the new one should prove sufficient for many years to come. This hall was constructed with an 18 foot ceiling, and when not required for Short Course classes and public meetings, will be used as ed gymnasium for the students. The space above the Assembly Hall is being used for one class room, a library and reading room and janitors' quarters. The basement is well lighted and will be used for agricultural machinery demonstrations, seed exhibits, etc. The old Assembly Hall has been remodelled and now contains two offices and a large and splendidly equipped biological class room, the best class room on the whole premises. 2nd, A new Horticultural Building with greenhouses attached, is also under construction and will provide the staff of the Horticultural Department with the necessary facilities to give the important subject of Horticulture that degree of attention which it deserves. This building, when completed, will be the most artisitc one on the premises and thoroughly in keeping with the nature of the subject, which has occasioned its construction. 3rd, A commodious and modernly equipped horse stable and a small shed for live stock have also been completed. The former horse stable has also been remodelled into a dairy stable. A description of these buildings will be found in the report of the Farm Superintendent.

Further Additions Required.

In looking over my report for 1911, I find that under this heading I requested more space and class rooms for the students. This has been provided. I also stated the need of a dairy instructor. He has been appointed. The other additions which I discussed were a Dormitory and a well equipped Experimental Department.

The need of a dormitory has become much more urgent and, if the College grows as much in 1913 as in 1912, it will have to be provided. As this subject has been fully discussed in a previous report, I will not further consider it now but merely express the hope that it may receive the serious consideration of the Government.

In regard to the Experimental Department, I take the opportunity of putting in public print a matter which, for several years, I have been privately discussing with various authorities. The Dominion Government has at Nappan, some 70 miles north of Truro, a most excellent Experimental Station where field tests and live stock experiments as well as other important lines of investigation are being carried on. In fact the management of this station are doing the very work which should be carried on at Truro if the Agricultural College is to be rounded out into a fully equipped institution. To contemplate a similar line of work at Truro seems like a most unnecessary over lapping and a waste of public funds. Without entering into details, I am of the opinion, and, in this, am supported by many leading men of Canada, that these two institutions at Truro and Nappan should be united and the work carried on at one common centre. Each would be beneficial to the other. Formerly, when the Nappan Station was the one Experimental Station for the three Maritime Provinces, I did not feel that this point could be so strongly urged. But now that Prince Edward Island and New Brunswick each have an Expiremental Station of their own, it seems to me that the time is ripe for such a union of forces as has been suggested in the foregoing.

Provided this, to our mind, devoutly to be wished for consumation were arrived at, it is likely that some local feeling of opposition may be aroused; but it seems to me that the interests of agricultural education and the judicious and economical expenditure of public funds are at stake and that, therefore, the matter should receive the most serious consideration of the public men who have to do with agricultural expenditures in Nova Scotia.

Conclusion.

As may be gleaned from the previous pages, the year 1912 has been the most satisfactory and successful in the history of the College. Many agencies have contributed to this and I cannot enumerate all. Before concluding my report, however, I wish to especially thank the citizens of Nova Scotia and the adjoining Maritime Provinces for the manner in which they have rallied around the College. I wish also to state my appreciation, as Principal of the College, for the support we have received from Principal Soloan and his colleagues of the Normal College, to the Principals of the Truro Manual Training and Domstic Science Schools for the large degree of assistance they have rendered in connection with our instruction work. In regard to yourself, as Premier, and the members of the Government of Nova Scotia, I cannot too highly state the appreciation which every member of the faculty have for the assistance which you have rendered us whenever called upon to do so. I can only hope that the success which has attended the work at the Agricultural College may prove a fair return to the citizens of the Province and to the Government which administers its public affairs.

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Principal College of Agriculture.

REPORT OF THE PROFESSOR OF BOTANY.

Agricultural College, Truro, Dec. 1, 1912.

Principal Cumming,

Sir:—I have the honor to submit the annual report of this department. It will be the last report of the department under its past organization as the appointment of a Provincial Entomologist will relieve it of the work in connection with insects and give more opportunity to investigate botanical problems, especially plant diseases.

The junior class received instruction in structural and systematic botany, the more important weeds and an elementary course in plant diseases, also a course in geology and its relations to the farm. Fifty six students took these courses. These courses are so arranged that students who can attend only one year receive as much directly practical benefit as possible while those intending to return have also laid a good foundation for the second year work.

The senior class received a course in plant anatomy, physiology and the diseases of plants, also a course in Zoology. Besides and preparatory to these and the course in bacteriology it is necessary to give them a course in microscopy. Twenty two students took these courses.

The details of these courses have been somewhat discussed in previous reports and it will be seen that in our crowded quarters the great increase in attendance has rendered the work of teaching satisfactorily very difficult. This will render the new laboratory which is being prepared all the more welcome both to teacher and student.

During the summer I have added to our collections of plants and insects and continued my special studies in the life history of some of these but at great disadvantage as it was impossible to carry on such work in the college building on account of the alterations in progress. I conducted a course in entomology in the Science Building for the benefit of the Rural Science students.

Insects.

By far the most important matter in connection with insects in the province during the year was the discovery by Mr. Sanders of the Dominion Entomological Department of the presence of San Jose scale on recent importations of nursery stock from Ontario. Fortunately, the wise policy had been pursued of training men here for such emergencies and we were able to at once, place a number of trained men, graduates of this College, at work under Mr. Sanders direction to stamp it out. We were also able to call to our aid as Provincial Entomologist to take charge of the work in connection with insects, Dr. Robert Matheson, a graduate of the School of Agriculture.

Outside of the scale and an increase in the nests of the brown-tailed moth no very serious outbreaks of insects occurred. I regret to report that the green apple-worm and aphis were abundant and did injury but no new insects not previously treated in my reports require special mention.

I wish to thank my many correspondents in regard to insects, who have assisted me so much with information and specimens and ask their cooperation with Dr. Matheson who will be better able to assist them.

Plant Diseases.

Silver Leaf. Since writing my previous report I have found a number of trees affected with this disease. Its insidious and slow development renders possible its more common occurence than is suspected, as the death of the tree might be ascribed to many other causes than the true one. The tree on which it was first discovered here, I reported dead in my last report but this spring it threw up two suckers from below the crown and these were affected and showed in the most marked degree all the symptoms of this disease. More remarkable still, there developed on the trunk from just under the ground to two inches above, a ring of the fruiting bodies, sporophores, completely covering the trunk at this place. These began to appear in late October and grew for nearly a month. This was just a year after the appearance of those higher up on the trunk and branches, last year. Still more remarkable is the renewal of growth in the sporophores formed last year, as during this same period (Oct.-Nov.) they grew to four or five times their former size.

Other Diseases. Three diseases of which I have written in previous reports apple scab, rot of stone fruits, and plum pockets were again wide spread and injurious. I received many reports of success in their control by following the directions in previous reports.

Gooseberry mildew and soft or blackrot of cabbage were quite prevalent this season.

I should be pleased to have specimens of diseases or letters from any locality where plant diseases occur.

Respectfully submitted,

H. W. SMITH.

REPORT OF THE PROVINCIAL ENTOMOLOGIST AND PROFESSOR OF ZOOLOGY.

M. Cumming, Esq.,

Secretary for Agriculture.

Sir:—I have the honor to submit the first report of this department.

Previous to my appointment, the Entomological work was carried on by Prof. H. W. Smith. Owing to my late arrival (Oct. 1, 1912), it will be impossible to give a complete or detailed account of the work carried on during the year. The work of controlling the Brown Tail Moth has been in charge of the Dominion Entomologist, the province providing three inspectors, Messrs. H. G. Payne, H. R. Brown and A. Kelsall, to act under the direction of Mr. G. E. Sanders, expert of the Division of Entomology, Ottawa. This work has been carried on in an efficient manner and as soon as the necessary data is available a full and detailed account will be published, covering the entire work done in controlling this serious pest. In the future the work against this pest will be conducted in co-operation with the Division of Entomology, Ottawa, the province providing the same number of inspectors as the Dominion. In this way it is hoped that the continued spread of this serious pest may be checked.

In the Spring, May 29, 1912, living San Jose' Scale was found by Mr. G. E. Sanders on the trees of Mr. Thos. Wagner, Aylesford. These trees were of the 1911 planting and the situation became at once serious for it was now demonstrated that San Jose' Scale could survive our winters. The matter was at once taken up by the Secretary for Agriculture with Dr. C. Gordon Hewitt, Dominion Entomologist and with the fruit growers of the Annapolis Valley. The Government of Nova Scotia at once recognized the seriousness of the situation. Acting under the provisions of the Injurious Insect, Pest and Plant Disease Act, 1911, and with the advice of the Secretary for Agriculture, they secured the services of Mr. G. E. Sanders, through the courtesy of Dr. C. Gordon Hewitt, to take charge of the proposed inspection work. The inspectors were appointed to act under Mr. Sanders and a thorough inspection of all the 1910, '11 and '12 plantings was undertaken.

As the inspection work progressed, the seriousness of the situation became more apparent. It was soon decided to destroy all trees infested with living San Jose' Scale and the necessary powers were given the inspectors by regulations passed by Order-in-Council on June 4, 1912.

This work has been carried on very efficiently by Mr. Sanders and on my arrival on Oct. 1, the inspection work was placed under the control of this office. Mr. H. G. Payne, who had already done very efficient work both in the Brown Tail Moth and San Jose' Scale inspection was placed in immediate charge of the field work. Under him were eight inspectors, Messrs. S. H. Payne, H. R. Brown, J. C. Gilliatt, C. A. Crooker, Guy Denton, A. Kelsall, Alan Dustan and J. C. Shipton. Inspection was carried on till about November 8th, when our field force was reduced to four men who were placed under Mr. Sanders, in charge of the field work against the Brown Tail Moth. During this winter all the men engaged in the Brown Tail Moth work are instructed to be on the look out for any infestation of Scale.

During the season just closed a thorough inspection of the fruit section of the Annapolis Valley as far east as Windsor has been made. A full report of the work with the results obtained will be published shortly by this office.

The work against the Brown Tail Moth commenced about November 8th and is under the direction of the Dominion Entomologist. Mr. Sanders, who is in direct charge of the field force, is assisted by seven men, four of whom are appointed and paid by the Province. These men are Messrs. H. G. Payne, H. R. Brown, A. Kelsall and J. C. Shipton. Mr. Sanders repports that he anticipates a considerable reduction of the infestation this year owing to the thorough work of the season of 1911-12. It is to be hoped that his anticipations may be realized.

Since my arrival, my efforts have been mainly devoted to the San Jose' Scale situation. As the present outbreak is due to the importation of infested nursery stock, the fruit growers of the Province demanded severe restrictions against future importations from infested districts. In accordance with the urgent request of the Nova Scotia Fruit Growers Association and acting under the advice of the Secretary for Agriculture and the Provincial Entomologist, the Government on October 25th, 1912, passed regulations governing the future importation of nursery stock. These regulations are now being carried into effect by this office and it is hoped that they will meet the situation and save our fruit industry from one of the worst insect pests.

In order to become better acquainted with the various Official Entomologists of the Dominion, I visited Ottawa at the time of the meetings of the Entomological Society of Ontario (Nov. 19-20). At the suggestion of Dr. C. Gordon

Hewitt, Dominion Entomologist, an informal meeting was held by the official Entomologists at which was discussed the various problems confronting us at the present time.

From Ottawa, I visited Boston. Through the kindness of Mr. D. M. Rogers, in charge of the moth suppression work under the United States Bureau of Entomology, I was enabled to visit some of the districts badly infested with the Gipsy and Brown Tail Moths. While there I investigated the methods employed for the suppression of the Gipsy Moth and the experimental work being carried on against these pests by the United States Bureau of Entomology at Melrose Highlands. The Gipsy Moth is one of the worst insect pests that has been imported into the United States. It is gradually extending its range northward along the Atlantic Coast and it may not be long before its presence is reported in Nova Scotia. We hope by taking precautionary measures that our Province may never suffer from the ravages of this pest. The control measures now being carried on against the Gipsy Moth in the New England States represent an expenditure of over $1,000,000 annually by the Federal Government and the various States concerned.

Up to the present time (Dec. 12) considerable work has been done this year in the effort to control the Brown Tail Moth. The results thus far would indicate that in some places the moths have gained considerable headway while in other places the infestation has been reduced more than 50 per cent. In the area between Digby and Lawrencetown over 6,000 nests have been taken thus far, the largest number since the work began. However it is hoped that with eight capable men in the field the infestation will be kept under control.

In conclusion, a further word should be said regarding the San Jose′ Scale. This pest has been found on trees all the way from Yarmouth to Windsor. As no other part of the province has been inspected, we may conclude that practically every fruit section in which there was considerable planting in 1911 and 1912 may have scale present in more or less abundance. All fruit growers should carefully examine their trees and if at all suspicious they should send samples of infested branches to this office. Full information and insepection will be made free of all charges. Furthermore, all our fruit growers should make a united effort to have all their young trees sprayed with lime-sulphur early in the season while they are dormant. Full directions for this spraying will be given in a forthcoming bulletin.

Respectfully submitted,

ROBERT MATHESON,

Provincial Entomologist.

REPORT OF THE PROFESSOR OF HORTICULTURE.

To M. Cumming, B. A., B. S. A.,
Principal Agricultural College,
Truro, N. S.,

Model Orchards.

Sir:—

Since the closing of the Agricultural College in April, I have visited each of the model or demonstration orchards of the province. These orchards, it will be remembered, were established under an act of the legislature of 1901, entitled an Act to Encourage Horticulture. The object is to discover the fruit growing possibilities of those parts of the province outside the recognized fruit district, to give in these localities a demonstration of what is considered the best orchard practice and to find out what varieties of fruits will succeed best here. The orchards are intended as object lessons to the communities in which they are placed. An owner thus undertakes an important public service and it is with this understanding that public funds are used to assist him in the work. There are now thirty-five of these orchards being cared for under the direction of the department of agriculture. These are distributed pretty well over the province, mostly two or three in a county. The map on page 32a shows the location of each orchard and the position of the fruit district in Nova Scotia.

Briefly, the orchard practice recommended and followed out wherever it has been possible has been as follows:—The ground has been plowed either in the fall, or as early in the spring as it was fit. This has been followed by successive harrowings at intervals of one week, or ten days, and after every rain, until the early part of July. A cover crop of crimson clover, vetch, buckwheat or rape has usually been sown and covered in with the last harrowing. This crop has occupied the ground till the end of the season, to be plowed under either in the fall or early the next spring. The heavier harrow, such as the disk, has been used early in the season, followed by lighter harrows such as the spring tooth and spike tooth as the season advances and the tilth improves. The whole of the orchard has not always been cultivated, especially in the case of young orchards, but it has always been the aim to have, at least, a strip along each row of trees under cultivation during the months of May and June. Sometimes this cultivated strip has been planted with a hoed crop without detriment to the orchard where proper fertilization of the soil has been given. But the growth of such crops as grain and grass within reach of the tree roots has always been discouraged as this almost invariably results in injury to the trees. A four year average of the yields of a number of orchards in Wayne County, N. Y. showed for orchards

Tilled 5 years or more	266	bu. per acre
Tilled most years	229	"
In sod most years, tilled occasionally	202	"
In sod 5 years or more	148	"

While it is essential for the best success with orchards to keep the ground around the trees well cultivated, there is often in young orchards a considerable space mid-way between the rows of trees which may be profitably devoted to ordinary farm crops, even grain and grass, provided the strips along the rows of trees receive proper cultivation. The practice in the model orchards has often been to utilize this extra space in this way, but always with the view to widening the cultivated strips as the trees need more room, and eventually giving up the whole ground to the orchard.

In fertilizing, the aim has been to keep the soil in as good condition, at least, as is required for ordinary farm crops. This has been done chiefly by the use of barnyard manure and sometimes commercial fertilizers also. An experiment is now being carried on in a number of the model orchards to determine the effect on the growth and productiveness of the trees of a liberal application of potash, phosphoric acid and nitrogen. These are applied in the form of muriate of potash, acid phosphate and nitrate of soda.

In pruning, sufficient thinning has been practiced to insure health and vigor of the tree top. Weak and diseased limbs have been removed. Limbs which crossed or interfered with each other and those which helped to form bad crotches have been cut out, and generally sufficient thinning done to admit the air and sunlight to the fruit and centre branches. The first fruit spurs to form and the young wood likely to produce fruit spurs have been carefully preserved, not cut off. The aim has been to have a well-balanced tree-top trained up out of the way of teams when cultivating. This is often obtained in combination with a low head by training the main limbs in an upward direction so as to give the tree the form of an inverted cone.

Each model orchard is provided with a spray pump. The trees are sprayed to prevent fungous diseases and to control the insect pests. Of the diseases, the black spot, or apple scab, is the most serious. In Eastern Nova Scotia the codling moth causing the wormy apple is the worst insect pest. The applications of the spray mixtures are timed for the attacks of the black spot and poisons are added to the mixture to kill whatever insects may be feeding on the foliage or the fruit about this time. Since the first appearance in the spring of the spores of the black spot occurs about apple blossom time, the first spray for this disease is applied after the leaf buds open and before the blossoms open. The second spray is applied after the petals fall, and the third spray ten days or two weeks after the second. The spray mixture now most commonly used for the control of the black spot is the lime-sulphur wash. The poison used with this for leaf eating insects is lead arsenate. The first spray kills the bud moth, tent caterpillar, brown tail moth and any other leaf eating insects which appear with the opening of the leaves. The second spray kills the codling moth, canker worm, tussock moth,etc. and the third spray any of these which may have been missed by the second spray and are still feeding on the foliage. If only one spray is given the second is recommended as the one most likely to give scab-free fruit and to control the codling moth. But many growers find it profitable to spray three, four or five times for the control of the black spot alone.

Model Orchards Planted in 1901.

Two model orchards were planted in 1901, one at Falkland Ridge, Annapolis County, the other at Antigonish. The Falkland Ridge orchard is planted on clay loam with clay subsoil. The chief varieties of apples are Gravenstein, Blenheim, Ribston, King, Golden Russet, Spy and a few others. This locality may be said to lie on the border of the fruit district, and all the varieties which succeed in that district do well here. In 1910 this orchard bore four barrels of apples, in 1911 thirty-three barrels and 1912 twenty six. In 1912 there were ten bushels of plums, one Burbank tree producing one and three fourths bushels.

Although the orchard site is elevated, the land is rather wet. The orchard is therefore being underdrained. About 250 feet of tile drain was laid in 1911 and the same amount in 1912. It is expected that there will be a difference of several days in the earliness of the drained land over the undrained, and also that this part of the orchard will be more easily worked and in better tilth than if it had remained undrained.

The Antigonish orchard was planted on gravelly loam with gravel subsoil. The chief varieties of apples are Ribston, King, Baldwin, Stark, Ontario, Golden Russet and Nonpareil. The trees for this orchard were delayed in transit and consequently many had to be replaced later, so that part of the orchard is considerably younger than the rest. In 1910 there were three barrels of apples, in 1911 five and in 1912

Orchards Planted in 1902.

There were eleven model orchards planted in 1902. These are at New Germany, Deerfield, Meteghan, Upper Musquodoboit, Upper Stewiacke, Avondale, Boylston, Cox Heath, Baddeck, West Bay and Blackstone.

The New Germany orchard was planted on clay loam with two slopes towards the middle of the orchard, one north, the other south. Sixteen varieties of apples were planted, the chief of which are Sutton Beauty, Baldwin, Ben Davis, Gano, Fallawater, American Pippin, Ontario and Hurlburt, Gravenstein, Golden Russet. All have done well except Sutton Beauty which has been an unsatisfactory variety wherever tried in the model orchards. This orchard is located in a part of the province where commercial orcharding is a possibility and all the varieties which succeed in the Annapolis Valley seem to do well here.

The Deerfield orchard, planted on sandy loam, contained fifteen varieties of apples. The owner now recommends Gravenstein, McIntosh Red, Hubbardston, Baldwin, Spy and Nonpareil as good varieties for this locality. Among plums, Burbank, Yellow Egg and Green Gage are recommended. In 1910 this orchard bore 4 barrels of apples; in 1911, 30 barrels, and in 1912, 24 1-2 barrels. In 1912 there were 27 bushels of plums. This orchard has received good care, especially in cultivation, fertilization and pruning.

The Meteghan orchard, planted on loam with a northerly slope, contained Sutton Beauty, King, Baldwin, Spy, Fallawater, Golden Russet, Nonpareil and Ben Davis as the principal varieties of apples. It has been fairly well cultivated and has been fertilized chiefly with lobster shells and hardwood ashes. This orchard bore about 18 barrels of apples in 1909 and five barrels in 1911. Owing to the absence of the owner, it did not receive the usual care in 1912 and consequently made less growth than usual.

The Musquodoboit orchard was planted on loam with a rather low situation and a gentle southerly slope. About twenty-five varieties of apples have been tried here, and of these the Wealthy, Wolfe River and Ben Davis seem to have done best. In 1910 there were two barrels, in 1911, two, and in 1912, six.

The Upper Stewiacke orchard was planted on a piece of rather low level loam. The farm and orchard changed owners in 1907. The varieties of apples which seem to have done best out of eighteen tried are Crimson Beauty, Yellow Transparent, Wolfe River, Golden Russet, Gano and Ben Davis. The crop of apples in 1911 was reported as being 20 barrels. This orchard has lately been receiving increased care in cultivation and fertilization and shows the effects in growth and yields.

The Avondale orchard, planted on sandy loam, contained sixteen varieties of apples. Among those which have borne fruit are Duchess, Alexander, Stark, Scott's Winter, Mann, Golden Russet and Ben Davis. In 1910 there were 1 1-2 barrels of apples; in 1911, 3 barrels and in 1912, 6 barrels. Ten varieties of plums were tried. In the last three years the yields were 1 3-4 bushels, 3 bushels and 7 bushels. The owner recommends Lombard and Shropshire Damson as the hardiest and best yielders. This orchard has received good care especially with regard to cultivation, fertilization and cover crops. The present practice is to keep a strip along each row of trees well cultivated each season until July. The rest of the ground is planted with some general farm crop, the whole orchard being well manured or fertilized. As the trees become older the cultivated strips should be widened until the ground is wholly devoted to the orchard.

The Boylston orchard, planted on loam, slopes westward towards the water of Guysboro Harbor. The chief varieties of apples here are Sutton Beauty, Wolfe River, Hurlburt, Baldwin, Scott's Winter, Golden Russet, Mann, Gano and Ben Davis. There were six barrels of apples in 1910, twenty-five in 1911, and in 1912. Owing to the illness of the owner, this orchard has been partly in sod during the past six years. Part of the orchard is plowed each year and planted with a hoed crop, and here, as might be expected, the trees do better than where they are in grass.

The Cox Heath orchard, planted on gravelly loam, contains Sutton Beauty, Hurlburt, Ontario, Baldwin, Scott's Winter, Mann, Gano and Ben Davis as the chief varieties of apples. In 1910 there were 3 1-2 barrels of apples, in 1911, 3 barrels and in 1912, six barrels.

The chief varieties of plums tried here are Burbank, Abundance, Washington, Lombard, Saunders, Imperial Gage, and Grand Duke. There were 2 bushels of plums in 1910, 3 bushels in 1911, and 7½ bushels in 1912. The owner recommends Lombard, Prince of Wales, Saunders and Imperial Gage. The Japanese varieties, Burbank, Abundance, etc., are not recommended for Eastern Nova Scotia.

This orchard is cultivated chiefly in strips along the tree rows, the intermediate space being planted with general farm crops. The practice is followed here of leaving a strip of sod about 18 inches wide along each row of trees, the object being to prevent the high winds from switching the trees around when the ground is soft and forming a funnel-like opening in the ground at the base of each tree. The same practice is followed also in the orchard at West Bay for the same reason. This strip of sod also obviates the necessity of coming very close to the row of trees with the implements of cultivation. This practice of leaving a narrow strip of sod along each row of trees is being followed by some commercial orchardists in the fruit district and apparently without injury to the trees, the object being to facilitate cultivation in orchards with low headed trees. When the trees have reached such a size that their feeding roots extend far beyond this strip of sod, into the cultivated ground, it is not likely that any injury results from the sod unless it should afford a harbor for injurious insects or mice. But it is important that the cultivated piece of land be sufficiently tilled.

The Baddeck orchard is planted on a piece of loam with a rather low situation. About twenty varieties of apples were tried here. Of these, the Red Astrachan, Yellow Transparent, Duchess, Wealthy and Dudley seem to be doing best. In 1910 there were six barrels of apples; in 1911 barrels and in 1912, barrels. The whole land of this orchard is now given up to the trees and is kept cultivated during the early part of the season.

The West Bay orchard, planted on sandy loam, contains less than one acre. The chief varieties of apples are Sutton Beauty, Wolfe River, Hurlburt, Mann, Scott's Winter and Ben Davis. In 1910 there were 8 barrels of apples; in 1911, 25 barrels; in 1912 barrels. In 1910, 10 bushels of plums; 1911, 7 1-2 bushels; 1912 bushels. This is one of the best orchards in Cape Breton. In its early years it received annual cultivation and has always been well fertilized. Of late years, the orchard has been cropped with grain, a practice which is advisable only under exceptional circumstances. The exceptional circumstances here are that it receives heavy annual fertilizing with the offal from a slaughter house. This helps to maintain the growth and vigor of the trees, so that the lack of cultivation through May and June is not felt so much.

The Blackstone orchard, planted on loam, contains about twenty varieties of apples. Of these the most satisfactory varieties seem to be Red Astrachan, Duchess, Wealthy, Wolf River, Alexander and McIntosh Red. This orchard is situated on a rather high piece of ground and is partially protected from strong westerly winds by a windbreak of young evergreens. There was some loss of trees at first by mice girdling the trunks. This orchard has been fairly well cultivated and the trees are making very good growth. They are mostly low headed which helps them to escape injury from the high winds prevalent here.

A model orchard was planted at North Brookfield in Queens County in 1902. The owner died shortly after and terms could not be arranged between the Department of Agriculture and the heirs for carrying on the work. Consequently this orchard was abandoned by the Department.

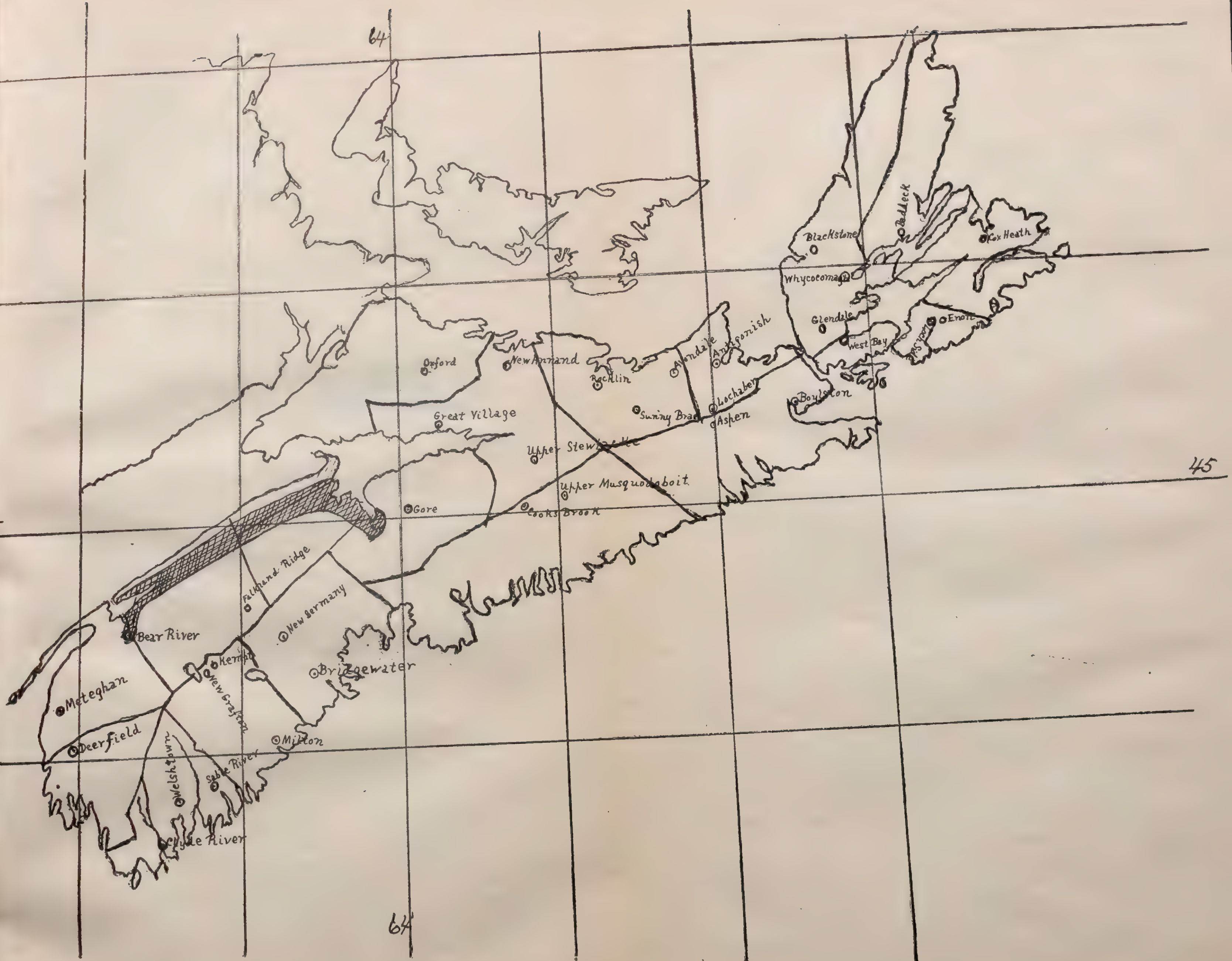
Orchards Planted in 1903.

Seven model orchards were planted in 1903. These are at Bear River, Gore, Cook's Brook, Oxford, New Annan, Rocklin and Aspen. One more orchard was planted this year at Hebron, Yarmouth County, but owing to the death of the owner shortly after and the impossibility of arranging terms with the purchaser of the farm this orchard was abandoned by the Department of Agriculture.

The Bear River orchard was planted on loam with an elevated site and a north-easterly slope. The chief varieties of apples are Banks Red Gravenstein, Wagener, Stark, Fallawater and Nonpareil. Fifteen Red Russet and ten Sutton Beauty were planted in this orchard. Nearly all the Red Russet died and the Sutton Beauty has not proved a success in any of the orchards. Thirteen Stark were planted in 1905 to replace the Red Russet which died. The crop of apples in 1911 was thirty barrels; in 1912, six. Plums in 1911, twenty bushels; 1912, seven, chiefly Burbank, Lombard and Yellow Egg. Peach trees have grown well in this orchard. Fitzgerald and Alexander seem to have done best. In 1912 there were 10 3-4 bushels from 8 trees.

The Gore orchard was planted on sandy loam with a north-westerly slope. The chief varieties of apples are Banks Red Gravenstein, Red Russet, Baldwin, Spy, Fallawater, Scott's Winter, Sutton Beauty and Nonpareil. In 1910 there were 3 barrels of apples; 1911, two, and in 1912, fifteen. In 1911, 1 1-2 bushels of plums, and in 1912, forty-five bushels. The owner recommends King and Spy for standard apple trees with Ontario and Wagener for fillers in orchards in this locality. For plums he recommends Washington, Burbank and Yellow Egg. In this part of Hants County, the orchard fruits, when given proper attention, appear to do well. The business is, no doubt, capable of greater development.

The Cook's Brook orchard was planted on sandy loam and contains about one acre. The varieties originally planted here included eight or ten of the leading commercial sorts as well as a few kinds well known for their hardiness. The varieties which seem to have succeeded best are Crimson Beauty, Yellow Transparent, Wealthy, Dudley and Baxter. In 1911 there


64
45
45
64
Blackstone
Baddeck
Cox Heath
Whycocomagh
Glendale
Enon
West Bay
Lochside
Boylston
Antigonish
Avondale
Lochaber
Aspen
Sunny Brae
Rocklin
New Annand
Oxford
Great Village
Upper Stewiacke
Upper Musquodoboit
Cooks Brook
Gore
Falkland Ridge
New Germany
Bear River
Kempt
Bridgewater
New Grafton
Meteghan
Deerfield
Milton
Welshtown
Sable River
Clyde River

were two barrels of apples and in 1912, three. The orchard is younger than would appear from the date of planting, in consequence of replacing of tender varieties.

The Oxford orchard, planted on sandy loam, has an elevated site with a south-easterly exposure. This land was naturally rather wet and in need of underdraining. Accordingly tile drains were laid in the fall of 1910 and the result was an improvement in the soil. The trees seemed to show the effects of the underdraining the next season. The yield of apples in 1911 was two barrels.

The New Annan orchard was planted on gravelly loam with a northerly exposure. Of sixteen varieties of apples tried here Yellow Transparent, Gravenstein, Stark, Scotts, Winter Baxter and Golden Russet have done well. Probably any of the ordinary hardy standard varieties would do well. This section could probably grow these varieties commercially. In 1911, this orchard bore two barrels of apples and in 1912, five barrels, and three bushels of plums.

The Rocklin orchard, planted on sandy loam with a south-easterly exposure, contains about two and one-half acres. The varieties which are doing well here are Wealthy, Ribston, King, Baxter, Stark, Golden Russet and Spy. The Yellow Egg and Lombard are recommended as good varieties of plums. The yield of apples in 1910 was three barrels; in 1911, six barrels.

The Aspen orchard was planted on sandy loam, sloping south-east and contains about one acre. The chief varieties of apples planted here were Ontario, Hurlburt, Scotts Winter, Sutton Beauty, Red Russet, Baldwin and Nonpareil. Many of these have proved too tender for the climate and have been replaced by hardier kinds. Varieties which have been tried and found suitable for this and similar localities are Crimson Beauty, Duchess, Wealthy, Alexander, Dudley and McIntosh Red. There were three bushels of apples in 1911 and two bushels in 1912.

Orchards Planted in 1904.

Four orchards were planted in 1904. These are at Bridgewater, Clyde River, Lochaber and Glendale. Most of these are doing well and have already begun to bear some fruit. This year the orchard at Lochaber bore ten barrels of apples and seven and one-half bushels of plums. The orchard at Bridgewater bore five barrels of apples and eleven bushels of plums, and the one at Glendale, three barrels of apples. This last orchard was another of those needing underdraining.

Accordingly, in 1908 two tile drains were laid through the wettest part of the orchard and in 1911 a beginning was made at finishing the underdraining of the whole orchard.

One orchard was planted in 1905 at Welshtown, Shelburne County, four were planted in 1907; one each at Milton, Kempt, and New Grafton, Queens County, and one at Great Village, Colchester County. One was planted in 1908 at the Monastery Antigonish County, and three in 1909; one at Sable River, Shelburne County, one at Loch Side, Richmond County, and one at Enon, Cape Breton County. Two were planted in 1910, one at Sunny Brae, Pictou County and one at Whycoconagh, Inverness County.

Orchard Sites.

As a rule, the best orchard sites are those which are somewhat higher than the surrounding land. This usually allows a greater depth of soil and a chance for both air and water drainage. Cold air on still nights tends to settle to the lower levels, leaving the higher ground less liable to frosts. A slope in any direction, except towards the prevailing winds, particularly the south-west winds, is often considered an advantage. Northerly slopes delay the blossoming of fruits and thus tend to prevent injury from late spring frosts. An easterly slope protects the orchard from westerly winds. A southerly slope is warmer and may give earlier or better colored fruit. But figure 2 shows the picture of an orchard which is a seeming contradiction to the generally accepted views on the matter of sites. This is an orchard at Shelburne, planted on a low level piece of almost swamp land with a black muck soil and clay sub soil. It is twelve years old and so far has grown well. It consists of three acres of Gravenstein, Golden Russet and Ben Davis. The ground is kept in sod and has a crop of hay taken from it each year. Manure is applied as a top dressing. In 1911 the orchard bore 140 barrels, and 1912, 100 barrels. The best trees here grow in the deepest mud.

Home Nurseries.

The introduction of the San Jose′ Scale into the province calls attention to the advantages of home grown nursery stock. In my 1909 report, I recommended the starting of small local nurseries in connection with a few of the model orchards for growing some of the varieties of apples which have been found best adapted for these districts. Such varieties as Crimson Beauty, Oldenburg, Wealthy, McIntosh Red, Dudley, etc. were to be propagated with a view to planting them in orchards to fruit or to be used as hardy stocks on which to top graft other

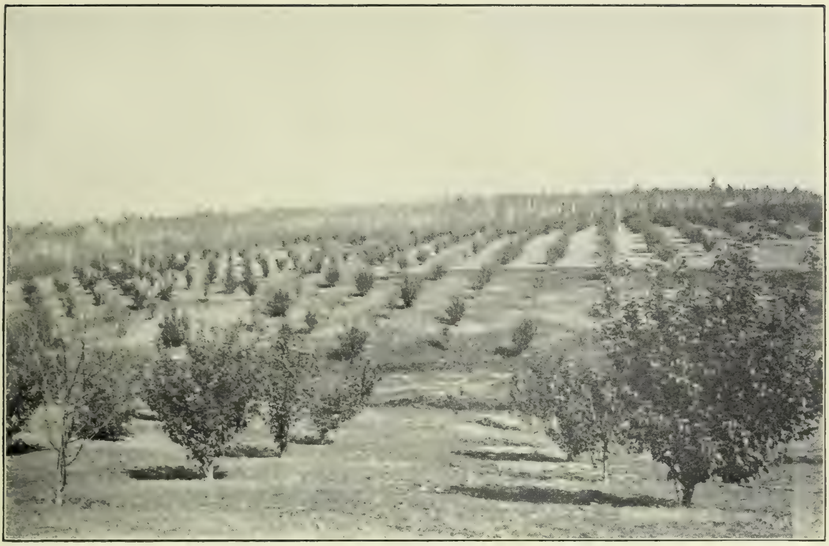


FIG. 1—Part of a ten year old Orchard owned by J. S. Margeson, Berwick N. S. Notice the low head and clean cultivation. One acre bore 240 barrels in 1912.

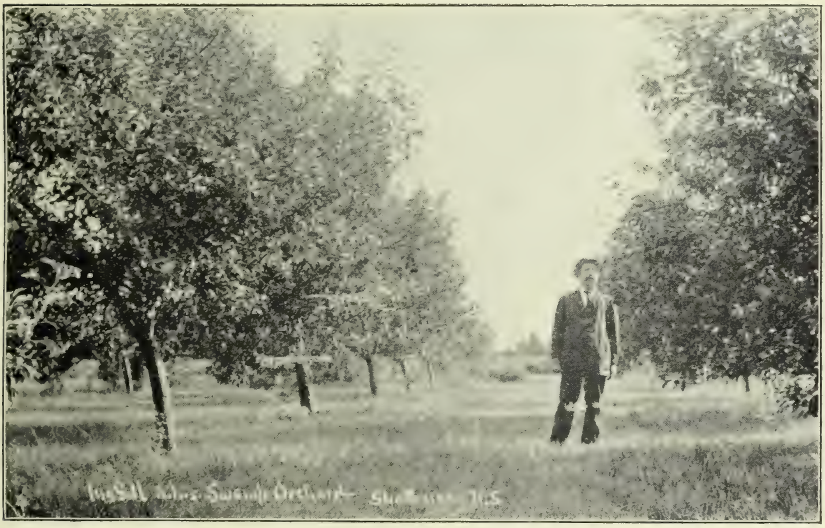


FIG.—2 Swamp Orchard owned by C. S. McGill, Shelburne, N. S.

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varieties. Some of the advantages of growing the nursery stock locally were pointed out as, 1st, a saving in freight charges; 2nd, less injury through delay in transplanting; 3rd, the opportunity to select the best trees for planting; 4th, less danger in introducing serious insect pests and plant diseases. Since then four local nurseries have been started; three in Cape Breton and one in Pictou County. These are in connection with the model orchards at Loch Side, Enon, Glendale and Sunny Brae. P.ums as well as apples are being planted in these nurseries and it is expected that a few trees will be available for planting in orchards in 1913. With the present restrictions on the importation of nursery stock, the advantage of a home supply is apparent

A few nursery rows of apples and plums have been startee in connection with the horticultural work at the Agricultural College. These trees were budded in August 1912. It is the plan to add to this nursery more apple and plum stock as well as cherries and also bush fruits and many of the ornamental shrubs.

Apple Crop of 1912.

The apple crop of 1912 was, with the exception of the 1911 crop, the largest which has been grown in the province. Of the 1912 crop, 1,730,496 barrels, 2,086 half-barrels and 10,011 boxes were packed and sold, or the equivalent of 1,734,876 barrels, counting three boxes equal to a barrel. This is without counting the apples sold to the evaporator, the cannery or the vinegar factory. The 1912 crop is estimated at over 1,000,000 barrels.

The following table, furnished by Mr. G. H. Vroom, Dominion Fruit Inspector, shows the different ports to which shipments of the 1911 crop were made and the number of packages sent in each case:

	Barrels	Half-barrels	Boxes
Liverpool	241,080	55	612
London	783,115	2,010	4,518
Glasgow	163,317	2	2,769
Manchester	21,090	....	....
South Africa	5,370	....	1,350
Hull	17,547	....	....
Newfoundland	16,394	19	215
West Indies	3,831	....	....
Hamburg	117,933	....	547
Havana	775	....	....
Boston	5,250	....	....
Bristol	28,644	....	....
Western Shipments	176,150	....	....
Local Markets	150,000	....	....
	1,730,496	2,086	10,011

These figures do not always represent the total number of barrels absorbed by the place to which they were shipped, since apples are sometimes re-shipped, as for example from London to Hamburg, or from London to South Africa.

The season of 1912 was notable for the heavy yields of Kings among apples, and of pears, plums and peaches. Unlike the preceding year, the black spot was very prevalent on some varieties and caused considerable loss to fruit growers. The Gravenstein was the worst in this respect, some orchards being so badly affected that the whole crop of this variety was sold as No. 3's. Lime-sulphur was the spray mixture almost universally used. Sprayed orchards were generally cleaner than unsprayed. Where spraying failed to give clean fruit, the result can partly be accounted for by not spraying often enough or by not using the mixture heavily enough. Lime-sulphur should be applied more heavily than Bordeaux mixture, and in the transitional stage from the use of one to the other it is natural that a little time should be required to learn the proper way to use the new mixture.

The College.

During the year I have taught the regular course students at the Agricultural College horticulture and political economy; the short course students, horticulture; the Normal College students gardening, and the Rural Science students gardening and nature study. Besides visiting the model orchards I judged fruit at some exhibitions in the western part of the province.

Last Spring, Mr. James Allen was engaged as gardener and Superintendent of the horticultural work at the Agricultural College. Besides attending to the usual work of the garden and orchard, Mr. Allen has had the extra work of changing and remaking driveways, making new lawns and moving trees, because of changes in the grounds due to the construction work at the College, and the erection of the new horticultural building and moving of the greenhouses. It will be another year before this extra work can be finished.

The Horticultural Building.

The new horticultural building, which is now in course of construction, will add greatly to the facilities for teaching horticulture. A more detailed account of this building will be given in a later report, when it is finished. It is sufficient now to say that among the main features of the new building are a forcing cellar under one of the greenhouses for rhubarb, asparagus and mushrooms; a storage cellar under the main building for the storage of fruits, vegetables and dormant plants, and a commodious class room and laboratory in proximity to the greenhouses. These additions will make it possible to give more of the practical side in the horticultural instruction than before, since there will be a chance now for practical garden work while the students are here, and practical work in propagation of plants or nursery practice.

The College Orchard.

The college orchard, which was moved from its former site to its present position in 1911, has begun to take root and make normal growth again. The first season after its removal being very dry, the trees merely leafed out and made little or no growth. In 1912, however, some trees made a twig growth of two feet or more. The orchard received this year nitrate of soda at the rate of 200 lbs. per acre, acid phosphate 400 lbs and muriate of potash, 200 lbs. Besides this, it was given a dressing of hardwood ashes the fall before, about one ton to the acre. The ground was cultivated regularly once every week or ten days throughout the growing season and a cover crop of vetch and oats sown in July. This cover crop has made a great growth and will furnish protection to the soil and the roots through the winter. In the spring it will be plowed under.

The following fruit trees were added to the orchard in the spring of 1912:—Fifteen apples—2 Duchess of Oldenburg, 2 Red Astrachan, 6 Gravenstein, 2 Fameuse, 3 Baxter; Seventeen pears—3 Beurre D'Anjou, 5 Clapp's Favorite, 5 Bartlet, 2 Vermont Beauty, 2 Beurre Clairgeau; Forty-seven plums—3 Tennant Prune, 3 Grand Duke, 2 Glass Seedling, 1 Klondyke, 3 Large Golden Prolific, 2 Monarch, 2 Duane's Purple, 2 October Purple, 2 Reine Claude, 2 Coe's Golden Drop, 2 Yellow Egg, 2 Gueü, 2 Maynard, 2 Moore's Arctic, 1 General Hand, 2 Stoddart, 2 Compass, 2 Wayland, 5 Cerite du Nord, 2 Field, 2 Bond's Seedling, 1 German Prune; Cherries—2 Early Richmond, 2 Montmorency. The plan is to test these varieties here and to propagate any which do well and distribute them in the model orchards.

There was also planted in the orchard one thousand each of the following varieties of strawberries:—Pride of Michigan, Wm. Belt, Mead, Gandy, Sample, Corsican, Glen Mary, and Three W's. The first four varieties grew much better than the last four, probably due to the fact that the first lot of plants was received in better order than the second lot.

The following bush fruits were planted on the south side of the orchard:—Currant—3 Climax, 10 Victoria Red, 22 Victoria Black, 6 Lee's Prolific, 19 Boskoop Giant, 5 Cherry, 4

Perfection, 4 La Versailles, 17 Moore's Ruby, 9 Fay's Prolific, Gooseberries—32 Keepsake, 24 Victoria, 10 Downing, 12 White Smith, 11 Houghton; Raspberries—75 Cuthbert; Blackberries—75 Snyder.

The best varieties of the bush fruits will be propagated for use in the model orchards.

One hundred plants of Myatt's Linnaeus rhubarb were set in the garden, and two dozen plants from the former garden plot. The latter will be used for winter forcing. Four hundred asparagus plants, which had to be moved from their place in the old garden, will also be used for forcing. New plants have been grown from seed to replace the asparagus used for forcing.

The Vegetable Garden.

With the exception of corn and tomatoes, the vegetables this year did well. The season here was not favorable for the ripening of vegetables requiring an abundance of sunshine. Experience up to the present suggests the following list of vegetables as good varieties for this locality:—

Beans—Wardwell's Kidney Wax, Davis' Kidney Wax, Giant Stringless (green pod), Refugee.

Beets—Early Turnip, Edmands Early, Crosby's Early Egyptian, Dirigo, Detroit Dark Red, Half Long Dark Red.

Cabbage—Early Winningstadt, Early Jersey Wakefield, Charleston Wakefield, Henderson's Succession, Simmer's Matchless Flat Duch, Red Rock, American Savoy.

Carrot—Golden Ball, Chantenay, Danvers Half Long.

Cauliflower—Extra Early Dwarf Erfurt, Early Snow Ball, Gilt Edge.

Celery—White Plume, Paris Golden Yellow, Chicago Self Blanching, Evans Triumph, Simmers Imperial, Giant Pascal.

Corn—First of All, White Cory, Wolverton's Early (yellow)

Cucumber—White Spine, Paris Pickling.

Lettuce—Grand Rapids, Big Boston

Onion—Early Yellow Cracker, Early Flat Red, Yellow Globe Danvers, Prizetaker, Large Red Wethersfield.

Parsnip—Hollow Crown, Guernsey.

Pumpkin—Sugar ,Connecticut.

Peas—Alaska, First of All, Nott's Excelsior, American Wonder, Carter's Daisy, Telephone, Bliss' Everbearing.

Potatoes—Early New Queen, Early Ohio, Dreer's Standard, Gold Coin, Empire State, Carmen No. 1, Green Mountain, Clark's No. 1, Dakota Red.

Radish—Non Plus Ultra, French Breakfast.

Spinach—Round Leaf, New Zealand.

Squash—Summer Crookneck, Bush Scallop, Hubbard, Golden Hubbard, Delicious.

Tomato—Earliana, Early Ruby,

Turnip—Early Milan, Melting Swede, Golden Ball, Rutabaga.

Respectfully submitted,

P. J. SHAW.

REPORT OF FARM SUPERINTENDENT AND PROFESSOR OF AGRICULTURE.

Principal M. Cumming,
Secretary for Agriculture.

Sir:—I have the honor to submit herewith the annual report of the Nova Scotia Agricultural College Farm.

The detailed management of all farm operations has been carried out by our efficient farm foreman, Mr. Thomas Hooper, manager of the horse barn and farm foreman. I am indebted to Mr. Hooper for the data kept of his careful thorough work which forms the basis of this report in so far as horse management and farm operations go. The cattle and swine have been under the skilled management of Mr. William Retson, manager of the cattle and swine barns. To Mr. Retson I am indebted for the carefully compiled data of feeding records and breeding.

The season of 1912 has been so unfavorable to crop production and harvest generally that we found considerable difficulty in carrying on work according to definite plans. Both cost of production and harvest were very materially increased by the continued wet weather.

Buildings operations interfered somewhat with the farm work, farm teams and men being employed therewith. During the month of April the farm teams and men prepared the site for the new horse barn and supplied the contractor with 136 yards of gravel and stone. This material they teamed from our own pit. Gravel and stone was also supplied the contractor for the new Horticultural Building to the extent of 180 yards. Road grading and ballasting occupied considerable time. The excavating of the site for the new college extension occupied all hands for two weeks; grading site for new bull barn and the drawing of part of the lumber for same occupied considerable time; two carloads of tile were teamed from the station; 1400 feet of tile were installed in the Clich marsh; 800 rods of fence, the building of the bull barn and the remodelling of the old horse barn were also undertaken by farm labor. These and other minor tasks of improvement were carried out by Mr. Hooper in a most efficient manner.

Pasturing of Marsh Lands.

During the month of September it was deemed advisable to pasture twenty-five acres of our marsh land. A crop of hay had been removed five weeks previous to pasturing. The area was enclosed with a four strand woven wire fence and provision for a water supply was made by installing a double acting force pump and a galvanized trough on the bank of North River. The grass sustained 32 head of cattle and 10 horses for 30 days. All the animals increased considerably in weight. After removal of stock the land was gone over with a chain harrow to scatter any manure. The fence and water system was also taken up and stored for next season's use.

LIVE STOCK.

This branch of the Farm has been carried on during the past year as successfully as in the past, notwithstanding a general increase in horses and cattle up to the limit of our accomodation. This branch is now hampered for want of land area and if animal husbandry is to continue successfully, more pasturage and paddock space is imperative. We have found great difficulty in obtaining sufficient straw and sawdust to properly bed the numerous animals. Our herds cannot be increased without a corresponding increase in land.

Horses.

I am pleased to report a good season for two of our stallions, Achille and Royal Baron. Cliffe Rosador and Lucifer 2nd have had fair patronage. Many "Achille" and "Royal Baron" colts that visited the Farm with their dams during July and August showed the exceptional qualities of their sires in a marked degree.

Many horse breeders and farmers at distant points throughout the province took advantage of "The sliding scale for service fee," as applied to mare owners at a distance greater than twenty miles from Truro. This sliding scale reduced the expense of breeding to the owner sufficiently to counterbalance any freight charges for transportation. Mares were boarded at a nominal charge of $2.00 per week. No accidents to mares in transit were reported. The system has been highly satisfactory to all.

Stallions at Service.

Premising the figures in regard to the patronage of the various stallions, it should be stated that we do not travel our stallions; nor do we urge patronage. Hence the numbers of mares bred is not, by any means, so large as if the stallions were under private management.

The Standard bred stallion "Achille," 30589, had a good season; in all 75 mares were bred 30 of which were returns. Service fee for past season was $16.00 cash, $20.00 time. The class of mares that are being bred to this horse are not all that could be desired. Some of course are really high class, with size, type and quality, while a few are rather too light to produce road horses suited to this country.

The Clysedale stallion "Royal Baron" 4722, has completed his third season for service. His foals born during the past season were all of exceptional quality, one filly foal six weeks old selling for over $200.00. 65 mares of many types were bred to this horse during the past season among them were several high class imported mares. The unbeaten show yard records of "Royal Baron" and his progeny should appeal to all lovers of high class horses. The service fee for "Royal Baron" for past season was $9.00 cash, $10.00 time, which seems very low for a horse of his breeding and conformation.

The Hackney stallion "Cliffe Rosador" 710, a horse of exceptional quality and a splendid sire, does not seem to be appreciated by as large a portion of the breeders as is "Achille" or "Royal Baron." If the merits of this type of horse were better known, no doubt his usefulness in the province would be increased. 24 mares were bred to "Cliffe Rosador" at a service fee of $9.00 cash, $10.00 time. Several mares were sent to him from Halifax.

The thoroughbred stallion, "Lucifer 2nd" had a rather light season, a number of high class mares were sent in from distant points. The prodgeny of this horse is of exceptional quality and he is deserving of a larger patronage. Nine mares were bred to "Lucifer 2nd" at a service of $9.00 cash or $10.00 time.

Young Stallions.

In addition to the four breeding stallions before mentioned, we have several promising youngsters. One, a two year old Clydesdale, sired by "Flash Favorite" 4583 and from the imported mare "Barbara." We also have a yearling Clysedale stallion sired by Flash Favorite 4583 from the imported mare College Belle."

Increase.

The Clysedale increase for past year consisted of the addition of three females, a filly born last week in June, sired by "Royal Baron" 4722, dam "Prima Donna" imp. The five year old imported mare "Miss Time" 18828, sired by "Up to Time" 3552, dam, "Lady Mary" 18896, bred by Geo. Machattie, Keith, Scotland. The imported yearling filly "Rose. . of Alton" 28856, sired by Baron Ruby" 10045, dam "Lily of Alton" 16229, bred by Jas. McLaren, Sterling, Scotland. In addition to the foregoing we have 6 mares and 6 geldings in service on the farm, also 3 filly colts of our own breeding, two of which will be broken to harness during the coming winter. The other is but one year old.

I am sorry to report the loss during the months of June and July of two Hackney fillies, daughters of "Queen Louise," one two-year old from colic, the other a yearling from strangles. We were also unfortunate to lose a Clydesdale filly in August, death due to inflamation and subsequent perforation of the stomach.

CATTLE.

I am pleased to report an enlargement of both dairy and beef herds through natural increase. Six animals have been purchased, the first prize three and four year old Holstein cows at the Winter Fair 1912, and an Ayrshire yearling heifer and an Ayrshire stock bull "Gardrum Prince." A number of cows have been disposed of having passed their stage of usefulness, also a number of young cows that have. . not come up to the desired standard of production have been singled out for disposal.

Health of Cattle.

It has been deemed advisable to divide our herds of cattle. On applying the tuberculin test a number of animals reacted. Whether these animals which are apparently vigorous have tuberculosis or to what extent the bacillus of tuberculosis has made inroads into their systems can only be proven by slaughter. They are too valuable to slaughter and may serve many years as breeding animals and give us some valuable young stock to aid in upbuilding a non-reacting herd.

I have in consequence of the findings of the tuberculin test decided to institute on this farm the Bang System for the eradication of bovine tuberculosis. Those animals which did not react to the test have been stabled apart from the reacting animals. The calves of the reacting cows have been removed from their dams at birth and placed in the stable of the non-reactors and fed on the milk of non-reacting cows. There is no communication between the two stables.

I have refused and shall continue to refuse to sell any animal for breeding purposes up to July 1913. The bull calves born since July 1, 1912 have been reared apart from reacting animals, they will be tested when twelve months old. Those that pass and come up to the standard as individuals can then go out. No animals have been sold or will be that have been in contact with reacting animals within six months time. A number of young bulls from the non-reacting herd will be ready for sale after July, 1913. All young bulls calved previous to July 1, 1912 have been disposed of by slaughter.

The foregoing statements may indicate a serious condition. It is a serious condition and should be a warning to all the stockmen in the province to be very careful in regard to any purchases they may make. It should prompt every stockman to investigate the condition of his own herd by applying the tuberculin test. I expect to have the herd absolutely free from this condition in one years time.

Holstein.

The Holstein herd is headed by "Count Mercena Paul" 6827-C. H. F. H. B. 10 aged cows, 3 four year olds, 4 three year olds, 4 two year olds and 4 heifer calves make up the total of the females.

The Ayrshire herd is headed by "Gardrum Prince" 30832, imported by Retson Brothers, a strong bull full of vigor, with a good reputation as a sire. Seven aged cows, three four year olds, four three year olds, two two year olds, nine yearlings and six heifer calves.

The Jersey herd is small, containing the old stock bull "Friar's Grey Fox" and nine females.

The Shorthorn herd, headed by the three year old bull "Roan Gloster" 82761, numbers fourteen head of breeding animals. The stock sired by "Roan Gloster" is most desirable the calves are strong deep bodied and well fleshed.

Performance of Dairy Cows.

The following individual note on each cow will give a fair idea of values, if the readers of this report will remember that the cost of producing a pound of butterfat increases as the period of lactation is extended, due to decreasing stimulus to produce milk, and energy expended in building up a foetus.

Those cows that were fresh when the pasture was best (cheap feed) have had a great advantage over those that calved in the autumn and were nearly dry during the cheap feed period. Those cows whose dates of freshening were within twelve months had not the same chance to make a big yearly record as those whose freshening dates extended beyond twelve months.

Ayrshires.

Gardrum Brandy 2nd, 33495, imported, calved January 1907. Dry six weeks, freshened June 12, 1912—twin heifer calves. Previous record year's 6288 lbs. of milk, average test 3.8 per cent of butter fat. This cow produced in 171 days, dating from June 12, 5779 lbs. of milk, average test 4.2 per cent, value of fat and skim milk $83.88, total feed cost for period $31.26, profit $52.62. Producing at this date, Dec. 15th, 1912, 20 1-2 lbs. per day. Bred again Dec. 4th, 1912.

Annie Laurie of Norwich, 17837, age 14 years, produced the year, 6124.5 lbs. of milk, 3.8 per cent. butter fat, having a value of $81.59 total feed cost of $55.54, leaving a profit of $26.03. This cow freshened in November and milked through period of high feed cost. Producing at this date, Dec. 15, 1912, 35 lbs. per day. Bred again Dec. 3rd, 1912.

College Merry Maid, 28776, age 4 years, freshened Jan. 15th, 1912 and produced in the 317 days following 7536.5 lbs. of milk, average per cent. of fat 4.1. Total feed cost of $62.06, value of butter fat and skim milk $101.16, profit $39.10. This cow, now dry, will freshen again April 17th, 1913. Now producing Dec. 15th, 12 lbs. per day.

Lady Mac, 23942, age 12 years, freshened Jan. 25th, 1912 and produced in the 310 days following 8718.5 lbs. of milk, testing an average 4 per cent. butter fat. Total feed cost $62.71, value of butter fat and skim milk $122.35. Profit $58.64. This cow, now dry, will freshen again Feb. 27, 1913. The production for previous year was 7756 lbs. of milk, testing 4.01 per cent. fat. Producing today, Dec. 15th, 5 lbs.

Violet 2nd of Cherry Bank, 28806, age 5 years. Freshened April 10th, 1911, produced during the 265 days following 5926 lbs. of milk testing 3.9 per cent butter fat. Total feed cost $50.89, total value of butter fat and skim milk $80.72. Profit $29.83. Not with calf again.

Lady Mac's Beatrice, 28684, age 2 years, freshened August 22nd, 1911, Produced 5803 lbs. of milk testing 4.3 per cent, having value of $85.95. Total cost of feed $62.12. Profit $23.83. Freshened again Dec. 1, 1912.

Gardrum Bonny Jean, 33498, age 2 years, freshened Nov. 23rd, 1911 and produced in the 365 days following 6498.5 lbs. of milk testing 4 per cent. butter fat, having a value of $90.44. Total feed cost $63.60. Profit $24.84. Bred again Dec. 13th, 1912. Producing today, Dec. 15, 1912, 15 lbs. per day.

Harelaw Cherry 3rd, 33490, age 3 years, freshened Jan. 7th, 1912, and produced in the 296 days following 6130 lbs. of milk testing 3.9 per cent. butter fat, having value of $83.96. Total feed cost $50.82. Profit $33.14. Bred again May 13, 1912.

Rose of St. Annes, 30031, age 3 years, freshened Jan. 13, 1912 and produced in the 203 days following 4398 lbs. of milk testing 4.2 per cent butter fat, valed at $63.62. Cost of feed $33.74. Profit $29.88. Not bred again.

Craig 2nd of St. Annes, 30030, age 3 years, freshened March 7th, 1912 and produced in the 260 days following 4398 lbs. of milk testing 4.9 per cent. butter fat, valued at $69.29. Total cost of feed $33.74. Profit $36.15. Bred again March 27th, 1912.

Holsteins.

Cornucopia Pauline Dekol, 7962, age 11 years, freshened Sept. 22nd, 1911, produced in the 365 days following 11257½ lbs. of milk, average fat test 3.1 per cent., valued at $126.48. Total cost of feed $95.80. Profit $30.68. Amount of butter fat produced 349 lbs. This cow milked through a long period of high feed cost and her profit is not as large as it would have been had she calved in May.

Flora Wayne of Riverside, 2414, age 14 years, freshened April 6th, 1912 and produced in the 235 days following 5022 lbs. of milk testing 3 per cent. butter fat, valued at $55.12. Total feed cost $45.91. Profit $9.21. Bred again June 26th, 1912. Now producing Dec. 15th, 8 lbs. per day. This is the first year that this cow has produced less than 12000 lbs. of milk.

Abbey DeKol, 3136, age 12 years, freshened April 30th, 1912 and produced during the 214 days following 9096.7 lbs. of milk testing 3.8 per cent. butter fat, valued at $121.45. Total cost of feed $47.73. Profit to date $73.45. Bred again May 12th, 1912. Now producing Dec. 15th, 22 1-2 lbs. of milk per day. This cow produced 2053 lbs. in June, testing 4 per cent. butter fat, making 95 2-3 lbs. of butter at a cost of $10.87, or 11 1-5 cents per pound.

Buffalo Girls Posch, 4080, age 10 years, freshened May 6, 1912, and produced in the 206 days following 8434.½ lbs. of milk, testing 2.8 per cent butter fat, valued at $86.35. Total cost of feed $44.91. Profit, $41.44. Bred again June 12th, 1912. Now producing, Dec. 15th, 16 lbs. per day.

College Abbey, 9885, age 5 years, freshened Nov. 24, 1911, and produced in the 299 days following 8271.2 lbs. of milk, testing 3.77 per cent butter fat, valued at $91.80. Total feed cost $72.70. Profit, $19.10. Bred again March 1, 1912.

College Flora, 9586, age 5 years, freshened Dec. 1st, 1911, and produced in the 258 days following 7483 lbs. of milk, testing 3 per cent., valued at $81.71. Total feed cost $62.20. Profit, $19.51. Bred again March 11th, 1912. Producing today, Dec. 15th, 44 1-2 lbs.

Maple Grove Louise DeKol, 11580, age 11 years, freshened March 14th, 1912, and produced in the 260 days following 10691 lbs. of milk, testing 3.7 per cent. butter fat valued at $137.67. Total cost of feed $63.09. Profit $74.18. Bred again June 21, 1912. Producing today 17 lbs.

Maris Rooker, 9801, age 5 years, freshened Sept. 25, 1911, and produced in the 321 days following 8060 lbs. of milk, testing 3.5 per cent. butter fat, valued at $87.86, Total feed cost $79.46. Profit $8.40.

Aggie Elenor, 11995, age 3 years, freshened Jan. 15th, 1912, and produced in the 256 days following 7188 3-4 lbs. of milk, testing 3.4 butter fat, valued at $81.21. Total cost of feed $54.91. Profit $26.30. Bred again June 11th, 1912.

Queen Abby DeKol, 13492, age 5 years, freshened May 5th, 1912, and produced in the 202 days following 4933 1-4 lbs. milk testing 3.5 per cent. butter fat, valued at $61.30. Total cost of feed $36.65. Profit $24.65. Bred again July 1st, 1912. Now milking 19 1-2 lbs. per day, Dec. 15th, 1912.

College Pauline DeKol, 11996, age 3 years, freshened Feb. 9, 1912, and produced in the 295 days following 6038½ lbs. of milk, testing 2.9 per cent butter fat valued at $64.23. Total cost of feed $54.23. Profit $10.00.

Jerseys.

Susie's Fox, 152. C. J. C. C. age 6 years, freshened Feb. 10th, 1912 and produced in the 295 days following 6219 lbs. of milk, testing 4.6 butter fat, valued at $97.66. Cost of feed $54.93. Profit $42.73. Did not conceive on breeding again. Now dry.

Fern's Brilliant Fontaine, 2161, C. J. C. C., age 5 years, freshened May 30th, 1912, and produced in the 195 days following 3147.5 lbs. of milk testing 5 per cent. butter fat valued at $53.17. Total cost of feed $31.59. Profit $21.58. Now producing 15 1-2 lbs. Did not conceive on breeding again.

In the foregoing individual report, values have been figured as follows: Credits; Butter fat 30c per lb.; Skim milk, 20c. per hundred.

Debits for feed,	Bran	$22.00 per ton
	Middlings	24.00 per ton
	Oil cake	39.00 per ton
	Cottonseed	35.00 per ton
	Turnips	.06 per bushel
	Ensilage	3.00 per ton
	Hay	10.00 per ton
	Green Feed	5.00 per ton
	Pasture	1.00 per month.

MILKING SHORTHORNS.

We have founded during the past few months the neucleus of a Milking Shorthorn herd. The herd bull at the head of this branch of the cattle department is "Braemrar Champion 2nd" No. 83722, sired by Braemar Champion, dam Butterfly Rose 2nd" No. 96746. His dam produced for us during her last lactation period 5950 lbs. of milk testing 4.2 per cent. butter fat, equal to 281.8 lbs. of butter. Freshened again Dec. 19th, 1912. Now producing 40 lbs. per day of 4 per cent. milk. Expect her to exceed the 8000 lb. mark this year.

Two additional foundation females were purchased in September both conforming to the ideal type of dual purpose cows. One, Roan Fanny, 77009, secured from John A. Boag & Son, Queensville, and one Rosalind, 92401, from H. & F. Auld, Eden Mills.

SWINE.

Six Yorkshire brood sows and four Berkshire brood sows make up the producing end of our swine herd. A boar of the Yorkshire breed and also a boar of the Berkshire breed are kept for service of our own and outside sows. These sows are given the run of outside yards and a manure shed at all seasons. They have been healthy, vigorous and prolific.

The six Yorkshire litters born during March and April numbered 55 pigs. These were all sold to farmers throughout the province at the low price of $5.00 per head, registered, or $4.00 per head unregistered.

The four Berkshire litters farrowed during March and April numbered 14 pigs. They were sired by our stock boar Marquis and were a good uniform lot of pigs. They were sold at the same price as the Yorkshires and were distributed through the province.

In April and May four Yorkshire sows were bred for fall litters. Pigs were born strong and vigorous. All of these have been sold to farmers and breeders.

One Berkshire sow was bred and produced seven nice pigs, all of which have been sold. I am also pleased to report that I have been able to buy a Berkshire stock boar of exceptional quality from Mr. J. A. Kinsman. This boar's dam was bred at Sandringham by His Majesty the King. Nearly all purchasers of pigs desired them registered.

HIGHLAND SHEEP.

The small flock of Highland sheep at one time maintained on this farm have for the past four years been on the estate of the late D. D. MacDonald, at Avondale.

These sheep have not been a success. The roaming nature of these sheep and their open fleeces of unsalable wool are not factors likely to blend with our changeable winter weather and frequent deep snows. There is no sale for the wool of the Highland Sheep in Eastern Canada, but the firm of Long and Bisby, of Hamilton, Ont. quoted me 16 c per pound on sample sent to them. I would recommend that no more effort be expended by this institution on this breed of sheep as the close wooled, compact bodied sheep of the various Downs breeds are much more suited to Nova Scotia's conditions for production and sale of wool, and mutton.

The field crops although subjected to an adverse season yielded well. The threshed grain and roots were of extra good quality. A large portion of our oat crop is being saved for seed and sold at the rate of 80 c. per bushel to those desiring to secure first class Banner oats. Selections have been made from mangel fields of choice roots to be used for seed production during next season. The following paragraphs will give in detail the returns from field crops.

Oats.

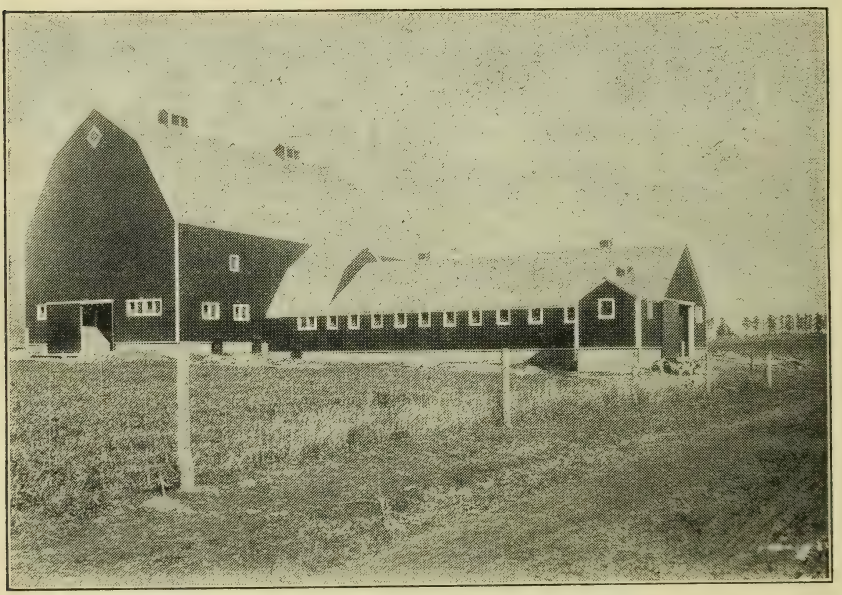
The oat crop with us this year was exceptionally good. Mr. F. L. Fuller and Mr. Sam Moore, our two grain experts, both say that they never have seen better stands of oats. Threshing not yet being completed, I can not give figures as to yield, but fully expect that the crop will average 100 bushels per acre, for two areas of upland containing twenty acres and five acres of marsh. Two acres of undrained marsh land yielded but 30 bushels per acre.

Land devoted to oats had produced the previous season crops of corn, roots or hay, and did not receive any manure or fertilizer for the oat crop. All oat land was seeded with red and alsike clover and I am pleased to report a splendid stand, the young clover being very uniform and vigorous on both upland and marsh. The quantity of seed used on different areas varied from 2 to 2 1-2 bushels, as the soil was in good condition 2 bushels proved to be ample. I am sorry to report considerable injury, a loss of 4 or 5 per cent. of total crop was the result of failure to apply the Formalin treatment to seed before seeding. Provision has been made whereby this shall not occur again. A grain "pickler" has been purchased and hereafter all seed oats will be treated for loose smut.

Corn.

The corn crop this season was light, due to most unfavorable weather, wet and cold. The soil did not become sufficiently warm to nourish properly the corn plant, which requires a warmer home for its roots than any of the common grains. The crop was divided into three plots, the first of which contained one and one-half acres. This soil had been cleared from woodland three years previous. It had produced in the foregoing season a crop of barley. Pervious fertilizing had consisted of an application of one hundred pounds of bone meal only. Soil preparation consisted of turning under barley stubble in October 1911, an application of twenty-five tons farmyard manure per acre in May turned over with double furrow plow and thoroughly worked through soil. This plot was sown in drills at rate of one and one-half bushels per acre of Compton's Early. It received four cultivations and one hoeing. Harvested Sept. 22nd with corn harvester, the sheaves were gathered together in large stooks to await silo filling. This corn did not raech the glazing stage. It produced 22.5 tons, or an average of 16 tons per acre. This plot was out best corn.

Plot No. 2 adjoined No. 1. Soil treatment and cultivation the same other than No. 2 had not received ground bone previous year and had produced a crop of oats instead of barley. This plot contained four acres and was sown in drills 36 inches apart with Canada Yellow on June 4th. The weather being so cold and wet the corn plants did not show above the soil until 13 days after planting. Growth was very slow with the exception of a few days in August. This corn being too short to harvest with corn harvester was cut and bound with the grain binder on Sept. 23rd. Yield 7 1-4 tons per acre or less than one half crop. This corn did not reach the glazing stage before frost. A four acre plot of the "MacKenzie Field" was sown to Compton's Early on May 10th but failed to germinate due to cold damp condition of the soil. This land was re-tilled and again seeded July 2nd, about 75 per cent. of the seed germinated, plants grew slowly giving a light yield of 6 1-8 tons per acre. The method of cultivation and fertilizing of the foregoing plot was the same as for the other two plots reported, the difference in yield being due to physical condition of soil



New Horse Barn at Nova Scotia Agricultural College.

The Hay Crop.

The hay crop this season was heavy. Operations commenced on July 18th and finished on August 30th. The continued wet weather caused considerable delay and some loss of quality in the making of the hay. More labor was required than usual, as much of the crop had to be set up in large coils to cure.

The upland hay was the produce ot twenty-five acres, three acres timothy and twenty two acres of mixed clover and timothy. Ten acres of this was from land seeded the previous year and twelve acres had been in hay for two years previous. The yield of timothy was 2 1-8 tons per acre. The mixed hay of twenty-two acres averaged 2 1-5 tons per acre fairly well cured hay.

The yield of hay on our marsh lands varied greatly, one eight-acre block did not yield one ton per acre while the section west of Salmon River and north of North River gave us a yield of over 3 tons per acre, a total area of 53 acres gave us 130 1-4 tons, which considering the season, was a good crop.

The Mangel Crop.

The season of 1912 was not at all favorable to the growth of mangels. This crop requires more heat than the turnip, and as the soil was comparatively cold during the growing season, the mangels did not do as well as the turnips.

The land on which the mangels were grownproduced the previous season a crop of mixed hay. After the removal of the hay, the land was plowed very shallow, then worked down with roller and disk and left until November when it was plowed again to depth of 6 1-2 inches.

In April twenty tons per acre of manure was spread over the entire area and well worked in. The land was worked from time to time until May 16th, when it was ridged up ready for seeding. The seeding was done on May 23rd, two varieties being sown, "The Yellow Globe" and the "Yellow Intermediate.' Eight pounds of seed per acre was the amount of seed used. Seven distinct fertilizer experiments were carried on in duplicate with the Mangel crop. From the yields it shows that an abundance of phosphoric acid is very desirable in fertilizers used on soils such as we have here at Truro. Plot 3, giving the largest return, received phosphate at the rate of 260 lbs. per acre, and was also well supplied with nitrogen. 1161 bushels per acre is a good yield considering the season. One half acre was devoted to each experiment. Mangel harvest started on October the 9th.

Turnips.

The season of 1912 proved very satisfactory for the growth of turnips on light soils. The yields on this farm were especially good, many individual turnips were produced that weighed upwards of 15 lbs. The variety grown, "The Kangaroo." Rate of seeding, 2 lbs. per cre.

The land devoted to this crop had produced hay the previous season. It was plowed and treated as was the area devoted to mangels. It was ridged up on June 1st and 3rd and sown in drills 28″ apart on June 4th and 5th. Turnip harvest commenced the first day of November. A yield of 1260 bushels per acre of smooth uniform roots is considered a good crop. Fertilizer experiments were carried on jointlywith the Expermental Department. Results of such are reported by that Department.

Copper Sulphate Spraying to destroy Cadlock.

The lately acquired MacKenzie Field being badly infested with Cadlock, I determined to try the common system of spraying as practiced for Mustard.

The experiment was carried out as follows:—

Three areas were staked out in a Soiling Crop plot containing oats, peas and vetches, the Cadlock occupied half the soil area and was about eight inches high and just coming into bloom. The oats and peas were 10 to 12 inches high and fairly strong plants.

On the afternoon of July 10th the following applications were made,

Plot 1, Mixture 1 lb. Cu So4 to 3 gals. Water
" 2, " " " 4 "
" 3, " " " 5 "

The above was applied as a fine spray, and thoroughly done.

On the morning of July 12th the Cadlock on all plots was badly corroded and wilted, the grain was somewhat scorched but not enough to destroy. The 1 to 5 mixture appeared to do the most effective work. The pea plants suffered more than the oats or vetches.

On July 20th, on visiting the plots I noted that the oats had quite recovered and many of the pea plants were in perfect form while the Cadlock was quite killed out.

There is no doubt whatever regarding the destroying action of Copper Sulphate on the Cadlock plant if it is applied thoroughly and in proper time.

On another area where the Cadlock had grown to the height of 10 to 12 inches and was showing bloom, a 1 to 5 mixture was applied. In this instance the bloom, leaves and branches were destroyed but the lower portions of the stems maintained sufficient vitality to develop new buds near the surface of the ground. This condition shows conclusively that to be effective the spray must be applied while the plant is tender which it usually is when only 5 to 7 inches high.

NEW FARM MACHINERY.

Corn Harvester. Owing to the difficulty in getting the corn crop harvested in past years, it was deemed advisable to buy a corn harvester of the Massey-Harris make. This machine was tried and found to work satisfactorily on standing corn over six feet high.

Spaulding Deep Tilling Machine. A double disc plowe made by the Spaulding Plow Co., of Cleveland, Ohio, was purchased for marsh land work. This machine is very strong. It is capable of turning a furrow 16 inches deep and thoroughly mixing the soil.

Grain Pickler. Owing to excessive "loose smut" in the oat crop of past season, a "grain pickler" has been installed to facilitate the treating of seed grain with formalin solution. This little machine is manufactured by the Dominion Specialty Co., of London, Ont.

Pasteurizer. A pasteruizer of Reid Design" 1000 lb. capacity has been installed in the Dairy. All cream is now pasteurized. The cream used for butter making is received from various sources and produced under various conditions. Hence, to have a uniform product thus purchase was necessary.

BUILDING IMPROVEMENTS.

During the past summer two new buildings for the farm have been erected. The new horse barn and a small building for the accomodation of bulls. The accompanying photo and plans of floor arrangement of horse barn will give a very fair idea of these structures. These structures consist of a main barn and a wing. The main barn is two stories high, the lower storey for the accomodation of stallions, brood mares and colts, the upper storey for feed storage. The wing is a one story structure for the accomodation of work horses.

The main barn is 85′ by 45′ outside measurements, basement type and constructed of concrete and wood. The ceiling of the basement is 10′ clear of the feed walk and 10′ 6″ clear of stall floors.

The storage section of this barn above the basement is built on a plank frame. The height of posts from floor to plate is 14′. The roof is hipped and trussed as shown in sketch. The drive floor is 15′ wide.

Foundations.

The foundations of the structure consist of concrete made by mixing Canada cement one part to seven of gravel. The foundation footing was made by putting 2′ of rock in bottom of trench. The north wall of main barn is seven feet high, built 18″ thick at bottom and 12″ at the top. The walls on the east and west side are 2′ high, 14″ thick at bottom and 12″ at the top. A wall of these dimensions forms the foundation for the work horse barn. Two stub walls were built 1′ high, 8″ thick to support the centre barn posts. A line of 2″ tile was laid beneath the footings at the outside edge to provide for drainage.

Flooring.

A four inch concrete floor was laid in the passage of main barn and through the work horse section. The mixture used was 1 to 7. The floors of the stalls of the main barn are of earth, but will be cobblestoned during coming winter. The stalls of the work horse section are plank over cement concrete. The floor of the storage barn is 2″ hemlock over 1″ spruce.

The Superstructure.

The superstructure is of wood with galvanized, corrugated metal roofing. The posts in the centre of the main barn basement are of planed spruce 6″ x 6″. The beams holding joists are of planed spruce 6″ x 10″; the joists are 3″ x 12″; the sides and plates are 6″ x 6″; the posts, 6″ x 6″ and 2″ x 6″. The outside walls are covered with 1″ spruce planed 8″ x 12″ boards. These were put on vertically and cracks battoned with 1 1-2 inch grooved battons. The sills were bolted to the wall with 3-4″ iron bolts set 14″ in the cement.

The Roof.

The rafters are built of 2″ x 6″ as shown in the sketch. They are slatted with 2″ x 4″ placed close enough (3′) to carry the metal roofing. The finish at the eaves is a 4″ projection of the metal with freeze planchard facing and bed moulding.

Stall Divisions and Walls.

The stall walls are of 2″ sheathing to a height of 4′ above which is used 7-8″ sheathing. The division walls between the stalls consist of one ply of 2″ sheathing, 2″ bracing and 2″ sheathing, making wall 6″ thick, which is solid to height of 3′ and braced from centre above this height. The four stallion stalls at the east end of the barn have division walls 9′ high, while the divisions between other stalls are only 7′.

Doors.

The doors of the stallion stalls are two sections with total height of 7′. The doors of the colt stalls are 5′ in height in one section, two heavy hinges and draw bolts keep each door in position.

The door for the storage barn is in two sections, being on roller track, covering a doorway 15′ in width. Each section is 8′ wide. The doors covering the doorways leading into basement and work horse sections are of roller type in single sections built 10′ 6″ wide and 1 3-4″ thick.

Windows.

In the basement there are eight windows in two sashes of four panes each. One sash in each is hinged at the bottom and check chained at the top. The sashes are all protected inside with 1-2″ mesh wire netting. There are eight windows in the storage barn, four lights each, 10″ x 12″ There is a four light diamond window at each end of barn at peak.

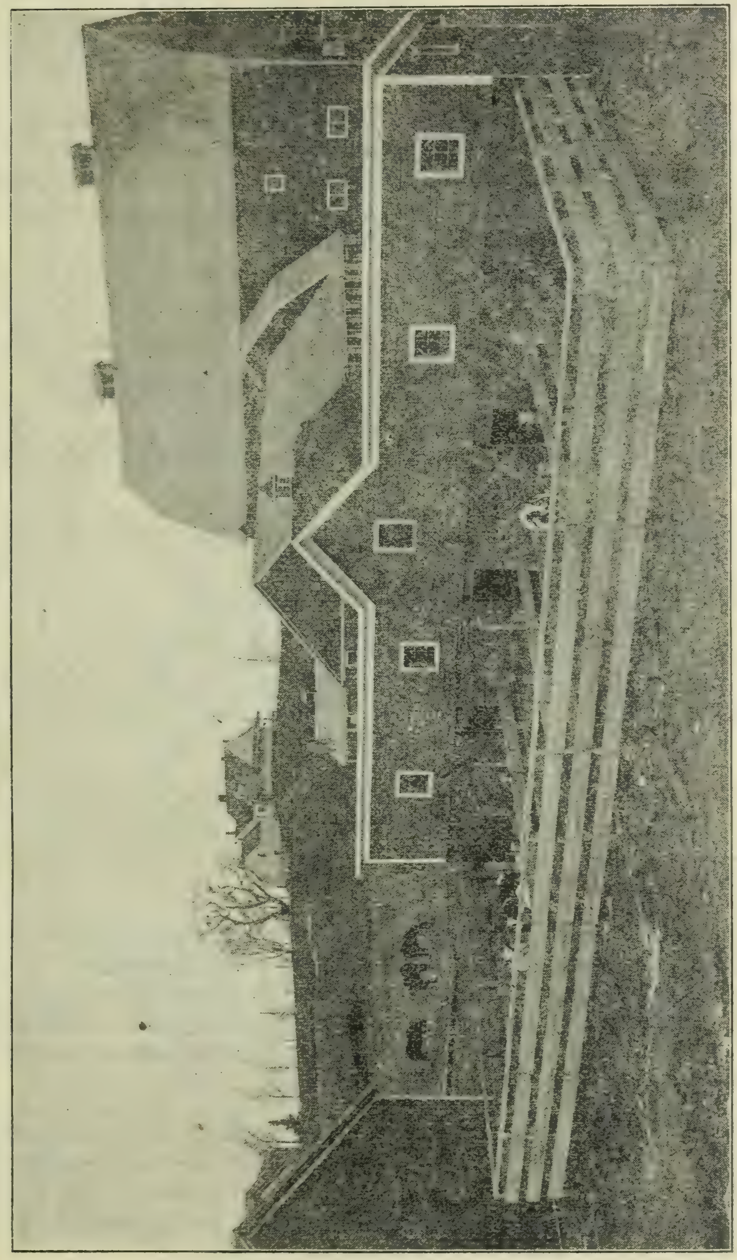
The Ventilating System.

The Rutherford system of ventilation has been installed. The foul air ventilators are 2′ x 2′ inside measure. Each is fitted with a control damper. These ventilators are made with a layer of two ply 7-8 sheathing put on horizontally with a layer of heavy building paper and a dead air space between sheathing. These foul air ventilators extend from ceiling of the basement to the cupola. There are two for the main barn and two for the work horse section. Fresh air intakes extend from hood outside the barn, under the walls and floors to heavy cast iron gratings placed on level with floor in desirable positions.

Water Sys'em.

A 2″ water pipe leading from the 2″ main supplies the water pressure for these barns. Two cement water troughs were built each 2′ high, 3′ long and 2′ wide inside measure, the walls being 4″ thick. A water stand pipe with hose rack and complete fire hose fittings has been installed in the main basement.

A harness room has been fitted up in the work horse section. Also carriage harness lockers. An asbestos lined boiler room was built as an annex to the work horse section. This has been fitted with racks and a feed cooker.



Bull Barn and Yards. Horse Barn shown in rear.

These barns were finished by an application of two coats of red paint and trimmed with white to match the other farm buildings.

Bull Barn.

The photograph and sketch of ground plan will give an idea of this structure erected during August and September by farm labor. Its usefulness lies in that its arrangement permits the bull to receive all the benefits of outside air and exercise at a very small expenditure of labor.

The pens, five in number, are twelve feet wide and fourteen feet long. The yards are twelve feet wide and thirty-two feet long. Each pen is provided with a strong feed manger and feed door so situated as to necessitate all feeding being done from without, thus protecting the attendant. Each pen is provided with a sliding door fitted with a hoist. These doors can be opened or closed by the attendant without going into either pen or yard.

This building is built largely of rough plank and inch lumber. The foundation was prepared by sinking twenty-four cement barrels in two lines fourteen feet apart and on same level, filling these with one to seven mixture of concrete. On the lines of concrete piers we bolted a 4″ x 6″ sills. The frame consisted of spruce poles cut 9′ for front and 12 feet for rear of building. These were placed 6′ apart and spiked top and bottom. A plate made of double 2″ x 6″ was used and braces from plate to posts were put into position. The rafters were 2″ x 6″ spruce 16′ long. The roofing consisted of close rough boarding over the rafters and three ply roofing of Ruberoid brand used over this. The slope of the roof is 3′ in 14′ which is ample where Ruberoid is used.

The individual pens are lined with rough hemolock plank to a height of seven feet. The yards when completed will be seven feet high and constructed of hemlock plank on cedar posts. This building has been put up at a cost of $325.00 for materials. The labor expense has not been heavy as we worked at it when we had nothing else pressing.

Numerous minor changes and repairs have been made about yards and buildings, carried out by the foremen of the different departments. Credit is due Mr. A. J. Lownie, the College Carpenter, for assistance in building bull barn, remodelling of old horse stable and numerous smaller tasks.

The various stables have all been thoroughly cleaned and whitewashed and are kept as sanitary as possible.

The dairy building interior has been thoroughly cleaned, walls, machinery, tables, etc. put in first class condition, paint and enamel applied where needed.

I am pleased to extend my best thanks to you and all connected with the College and Farm for the assistance given.

Respectfully submitted,

LIONEL STEVENSON,

Farm Superintendent.

REPORT OF DRAINAGE SURVEYOR.

To M. Cumming, B. A., B. S. A.
Secretary for Agriculture.

Sir:—In submitting this, my first report as drainage surveyor, I beg leave to call your attention to the great interest which is being taken in the subject of drainage throughout the Province. Farmers everywhere are realizing that they must drain their land more effectively than they have done in the past or cease to farm, as they cannot farm profitably with poorly drained soil. This realization comes backed by the knowledge which experience gives, the experience of men who have drained their land and reaped the resulting benefit. It is a significant fact that in Nova Scotia, as elsewhere, the most enthusiastic advocates of underdrainage are those men who have had most experience with it on their own farms. Others taking note of this, are becoming more and more easily drawn to study and discuss the possibilities. This interest is very real as proven by the demand for drainage tiles which has been greater than the supply, throughout the season, despite the fact that the entire Nova Scotian output has been advanced in price some 20 per cent. since last year and that even the old prices were considerably in excess of the average for the Dominion. Unquestionably these excessive prices are tending to discourage many farmers who wish to begin drainage operations, but a large amount of work is being carried on nevertheless.

Value of Underdrainage to the Province.

No statistics on this point are available as yet. Suffice it to say that there are few farms, in almost any section of the Province, which have not some fields failing, two years out of three, to yield a revenue because of excess water during part of the growing season. In some whole sections, the loss of crop, during the season just past, (a loss which could have been prevented very largely by thorough drainage) would have paid for a large share of the drainage of the farms in the locality.

Work of the Year.

During the past year, I have taken charge of the courses in surveying and drainage at the College, have taken up the question on one or two occasions at meetings and carried on some demonstration work at the Winter Fairs of 1911 and 1912 as well as in various parts of the Province while engaged in making surveys. I also spent a week in Cape Breton assisting with the laying of a system of drains in one of the "model orchards."

Drainage Survey Work on the Farms.

The offer of drainage surveys, made for the farmers free of charge except travelling expenses, has been taken advantage of quite freely during the year. In response to applications, I have made some 41 surveys, covering an area of 1070 acres, since I assumed my present duties in September 1911. Nearly all of this work has been done during the Summer of 1912 though I made several surveys during November 1911 and one in October of that year. This branch of the work has received enthusiastic support and I have at present several applications for surveys which I could not reach this season, owing to lack of time but which will be made next year.

Taking this work by Counties, surveys were made as follows:

	Surveys	Acres
Annapolis County	9	147
Colchester "	4	168
Cumberland "	2	250
Kings "	7	129
Pictou "	19	280

In Pictou County the Buckeye Traction Ditcher, owned by the farmers of the County, is expected to dig the drains in nearly all the land surveyed. A small amount has already been done.

In Kings County the ditcher, owned by the Government, has already put in a large amount of the surveyed drains and the owners of practically all the land surveyed are anxious to secure the use of the machine as early as possible.

Annapolis County farmers are trying to secure the machine for the season of 1913 to dig the drains surveyed there while all over the Province the question is asked, "when can I get the ditcher to work on my farm?"

Government Loans for Drainage Purposes.

The "Tile Drainage Act," which makes provision for the loan of Government monies to farmers for purposes of drainage, has as yet never been taken advantage of. This is due partly to the lack of information which the farmers themselves have regarding it; partly to the aforementioned extreme prices at which tiles are held this year making the farmer, who needs to borrow, hesitate before undertaking the extra expense; and very largely to the fact that this appropriation is handled by the Municipal Councils, many members of which are themselves unaware of the existence of the Act or its provisions.

Could this fund be administered directly by the Government, the farmer would be in a better position with respect to it.

In conclusion, I wish to express my appreciation of the consideration shown me by Mr. F. L. Fuller who, as manager of the ditching machine, has had some direction over my work as well.

I am also indebted for advice and help to the members of the staff of the Department of Physics of the Ontario Agricultural College and to Prof. Lynde of MacDonald College.

Respectfully submitted,

B. H. LANDELS.

REPORT OF POULTRY DEPARTMENT.

Prof. M. Cumming,
Principal Agricultural College,
Truro, N. S.

Sir:—I have the honor to submit herewith my 11th annual report, as manager of the Poultry Department.

The interest in poultry keeping continues to increase and it is a pleasure to note the results which are reported in the press from time to time of the results obtained by persons keeping records of their flocks and following the most improved methods of care and treatment.

During the past year The Scotsburn Creamery Company formed an egg circle in connection with their business. This circle has been in operation for some time and is giving patrons satisfaction. The price which was received by the patrons for eggs from the store was 23 c per dozen and no regard or premium was paid for freshness nor quality. After the circle was started the eggs were shipped regularly and were retailed for 35 cents per dozen, netting the patrons an advance of 8 cents per dozen over the former method of selling them. This system gave the consumers a better article and also reduced the cost of handling the eggs. A leading dealer told the writer that he would pay 10 cents per dozen more for circle eggs which were strictly fresh and of good quality as his loss was very great by the country store system of gathering as at present prevails. The eggs are ruined in transit from producer to consumer and dissatisfaction and loss result. The store plan of gathering eggs is at fault in that the case of 12, 16 or 32 dozen is the unit for shipment. In the circle the small paste-board carton holding one dozen eggs is made the unit and brought to the creamery or gathering point and shipped out at regular intervals. The farmer who keeps a small number of fowls brings his lot of eggs to the creamery and each and every other patron does the same with the result that the total collected each day will fill a case or more which are shipped out more regular and the consumer gets the eggs in a very much fresher condition. Where this plan of marketing is followed the consumer gets a better article at less cost and the farmer gets more for his eggs. as the expense of handling and middlemen's profits are done away with. The important point to be kept in mind is that each person is responsible for the quality of their product, and by the use of rubber stamps which identifies the patron who ships inferior eggs and he may be called on to make good the loss to the circle.

The term "new-laid egg" has been defined by the Poultry Producers Association of Canada and is here given:—

"A new-laid egg is an egg that is not over 5 days old when shipped, an egg that has been gathered promptly and kept in a moderately dry cool place (under 60 degrees), free from foul odors and other contaminating influences. On holding a new laid egg to the light it will be seen that the air space in the larger end is very small and the yolk almost invisible, as in Figure 1.

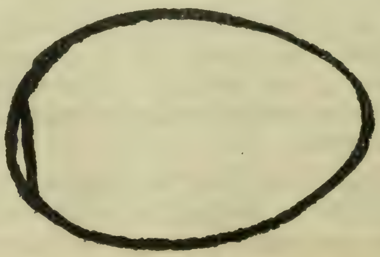


Fig. 1.

1. Air Space.

As the age continues, the air space enlarges and the yolk becomes visible as in Figure 2.

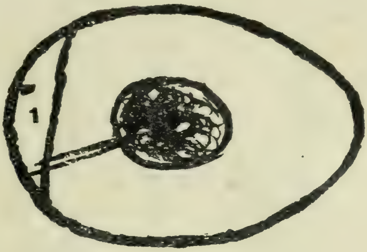


Fig. 2.

For ordinary purposes two grades of eggs will be found sufficient to satisfy the demands made on the producer, viz:—New Laid Selects and No. 1.

New Laid Selects.

To consist of strictly new laid eggs not over 5 days old weighing not less than 24 ounces to the dozen and of uniform size and color.

No. 1.

To consist of new laid eggs, not over 5 days old, weighing not less than 21 ounces to the dozen, clean and of uniform color."

It is very important that all members in a co-operative egg circle work to put the product out which will establish a reputation for the circle.

The blank record sheets were forwarded monthly to seventeen persons during the past year. Our plan is to forward in duplicate the record sheets and to keep on file the returns as they are received. The results which were obtained by the persons keeping these records are very good indeed and show plainly what can be done with poultry in Nova Scotia. During the early spring the Chronicle Publishing Co. offered a prize for the best dozen eggs. They also received some very interesting information from their readers in regard to the poultry records of flocks in different parts of the province. It is hoped that this work can be continued as it is a means of interesting many in improving their flocks.

NAMES OF PERSONS KEEPING POULTRY RECORDS.

Name.	P. O. Address	Breed
Mrs. C. N. Johnson	Newton Mills	Leghorns.
Mrs. Nelson Adams	Yarmouth	Mixed.
T. G. Walton	Lorne Station	Barred Plymouth Rocks.
Mrs. Burgess Blackadar	Yarmouth	White Orpingtons.
W. F. Newcombe	Brooklyn Corner	White Wyandots.
Earl W. Duncanson	Gaspereau	Mixed.
E. J. White	Bedford	Mixed.
Mrs. Wm. Lynch	Kemptown	Barred Plymouth Rocks.
Mrs. Arthur Hayward	St. John's, Newfoundland	Mixed.
R. W. Rand	Upper Canard	
Miss B. A. Moore	Upper North Sydney	Barred Rocks & Black Minorcas.
T. Schafheitlin	Canning	Mixed.
W. J. Seaman	Bradalbane, P. E. I.	
Alex. Campbell	Brookfield, P. E. I.	
W. B. Price	Bridgetown, N. S.	
Mr. Russel Howard	Little York, P. E. I.	
Rev. W. B. Crowell	Arcadia, Yarmouth County	Barred Plymouth Rocks.

The report which we received from Rev. W. B. Crowell was the best which we had during the past year. His record was an interesting illustration of what can be done with poultry given proper feed and regular care. His method of feeding is as follows: A mixture of dry bran and feed flour in equal parts by weight together with 5 per cent. of linseed meal is kept in a hopper where the fowls have access to at all times.

In addition, a mixture of cracked corn, wheat, oats and barley is fed in deep litter for the fowls to scratch in and a quantity of sprouted oats is fed during the winter as green feed. A supply of oyster shells, grit and charcoal is also provided in a small hopper for the fowls. Clean fresh water is also provided for the fowls at all times. These fowls were kept in an open front house with drop curtains. A report from Mr. Crowell states that from eight hens the production was 1935 eggs during the past year. A number of others who kept records, gave reports which were very satisfactory and showed excellent results in egg production.

During the past year I forwarded blue print plans of different kinds to persons in nearly every County of the province. It is our intention to continue this work, as by this means, we are able to assist in improving the housing of the poultry at a very small cost and effect needed reforms. The following is a list of the different plans and the number made and sent out from this department:—

2 Pen House Plan	108
Maine Trap Nest	38
Movable Colony House	20
2 Compartment Brooder	16
	182

We also forward with each plan a list of the material required for to build the house, nest or brooder and in some cases a photograph was forwarded in order to make the plans complete.

It is again a pleasure for me to report a very successful show held by the Egerton Poultry and Pet Stock Association at New Glasgow on November 13, 14 and 15. This is the fourth show held by this Association and is the best yet. Eight hundred birds were shown and the exhibits were very superior to any which I have had the opportunity of passing judgement upon. The committee who have the work in hand worked faithfully and the success is due to their efforts. Unfortunately the weather proved very unfavorable and their receipts did not come up to their expectatons. They however hope to continue the work, and given fair weather will be able to render a valuable work to the poultry industry by means of their show.

The Cape Breton County Poultry Association have decided to hold their second annual show in January and in one may judge by the interest taken in the work in Cape Breton, a larger and better show can reasonably be expected which will result in much improvement to the industry in Cape Breton.

The Yarmouth County Poultry Association have decided to hold their initial show in Yarmouth during the first week in Februray.

The above organizations and others of a similar nature have an unlimited field for work in Nova Scotia. What is needed to further the interests of poultry men is a good co-operative organization to help the individual to place his product on the market in the best possible condition, to assist the small poultryman, to obtain the proper feeds he requires at a reasonable price and to induce the dealers in poultry products to adopt recognized standards for grading and packing these products. In the countries of Denmark and Sweden, the poultry industry has increased and become very profitable by a good system of co-operation with some government assistance to effect organization. After several years of observation and close contact with the industry, it is the opinion of the writer that the greatest need in Nova Scotia is an effective system of co-operation. I would respectfully recommend that some assistance be given to establish in this province some co-operative egg circles and also assist the Poultry Associations to carry on the splendid work which they have begun.

In visiting the fall exhibitions we have catalogued all the exhibitors and now have a very representative list of the poultry breeders in the province. We are thus in a position to reach all interested in poultry matters with bulletins and literature of interest to their work.

I have judged the poultry exhibits at the exhibitions held at Caledonia, Queens Co.; Bridgewater, Lunenburg Co.; Yarmouth, Yarmouth Co.; Bear River, Digby Co.; Parrsboro, Cumberland Co., and at the Nova Scotia Horticultural show held at Bridgetown, Annapolis Co. I also attended the Provincial Exhibition at Halifax and the Maritime Winter Fair at Amherst as superintendent of the Poultry Show.

Permission was obtained and I visited St. John's, Newfoundland to judge the first poultry show held in the Colony. The exhibits were very good and the appointments about the show were all one could desire. After the close of the show, I gave an address on Poultry at Harbor Grace.

During the time of the Yarmouth Exhibition, at an informal meeting of poultry exhibitors, a Yarmouth County Poultry Association was organized and it is their intention to hold a Winter show during the first week in February, 1913

We obtained from the department a special grant which was used to purchase coops to assist in holding shows. These coops are collapsible and it is the intention to use them for poultry shows in the province. I would like to mention that where any exhibition wishes to obtain these coops applications will be booked in the order received and the cost of transportation both ways to be paid by the exhibition using the coops.

On June 10, 11 and 12 was in attendance at the meetings of the Poultry Producers Association held at Ottawa. At these meetings plans were agreed on to assist in furthering the poultry interests by an educational and co-operative campaign which would improve the standard of poultry and eggs.

During the past year we raised 260 chickens, 140 ducks and 32 Geese. The cold wet of the spring and summer was not very favorable for the quick development of the young stock. However they made fairly good growth and went into winter quarters in good condition. We continue to use the trap nests in selecting our best layers and it gives entire satisfaction.

The geese laid well in the spring and when the young were hatched we fed them for the first few days dry bread soaked in skim-milk. It is importnt to get the young goslings out on the grass as soon as possible after they have become "nest-ripe." Clean fresh water should be provided and care should be taken that they do not get far away from the mother goose or they wlli chill very quickly and die. They should be confined to small movable yards and moved onto fresh grass each day. Shelter should be provided to protect them from the sun and rain. After five days they may be fed a small quantity of a mash made of equal parts of bran and shorts. After they are two weeks old they may be let run over pasture and the more green food they get the better they grow. If to be fattened they should be confined and fed plenty of corn meal and green food such as cut green oats, clover, etc.

Our chickens, ducks and geese which we did not require for breeding purposes were disposed of in the same manner as here-to-fore.

An urgent need in our Poultry Department is a well equipped brooder house. We have in the past raised all our young chickens in small brooders but during the past season it was very difficult, expecially in the early part of the season, to get small brooders heated sufficiently to keep chicks warm and comfortable.

I would also suggest that the small goose house be removed from the present site to a site nearer the other buildings of this department. During the early spring we had many eggs stolen from this building and it is difficult to keep proper watch in the present situation of the building.

I wish to express my sincere thanks to yourself for much assistance rendered to me during the past year and hope that the improvements which I have suggested will receive your attention as promptly and effectually as in the past.

All of which is respectfully submitted.

J. P. LANDRY.

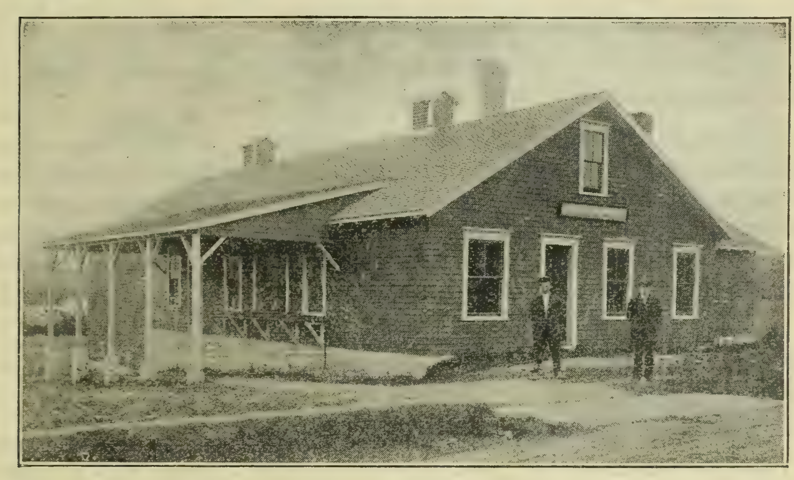
REPORT OF SUPERINTENDENT OF DAIRYING.

Truro, Nova Scotia, January 3, 1913

Professor M. Cumming,
Secretary for Agriculture,
Truro, N. S.

Sir,—I have the honor to submit my first report as Superintendent of Dairying, which appointment dates from the 20th of April last.

The season of 1912 was not any more favorable for Dairying than the previous year. The cold backward spring delayed the growth of grass and necessitated the stable feeding of cows for a longer period than usual. Nevertheless, there was an increase during the year of about 27 per cent. in the amount of butter manufactured in the creameries over 1911 and 1911 was the banner year in the province by about 30 per cent. over the previous year. The make of cheese however, shows a falling off, owing largely to the fact that most parts of the Province appear to be better suited to the cream gathered creamery and it is in that direction that most of the attention is being paid. However, there are some sections where, owing to local conditions, it is still perhaps more suitable to cheese factories. Two new creameries commenced operation during the year, one at Dayton in Yarmouth County and the other at River Herbert in Cumberland County. The one in Yarmouth County commenced business about the 1st April and, as will be seen by the detailed statement, has had a very successful season, and has demonstrated the possibilities there are in the province for the development of Dairying. The good influence of this creamery in the establishment of a more permanent market for cream at better average prices is already being felt in the western end of the province, and no doubt, many new patrons will be added during the coming year and we may look for a permanent increase for many years to come.



Yarmouth Creamery.

The creamery at River Herbert is composed entirely of a co-operative company of farmers, incorporated by a special Act of the Legislative Assembly, copied after the principles of Co-operative Companies in Denmark having a guaranteed rather than a cash capital. Operations were not commenced until about the middle of July. Consequently the managers did not have as large a support as if the business had been started in the early spring, which demonstrates the advisability of new companies in future getting organized during the summer months so that the buildings can be put up in the fall, and business commenced in the early spring. The business at River Hebert, however, has been very satisfactory and no doubt will develop at a more rapid rate during the coming year.

An increased interest is also evident at many of the old creameries. The Scotsburn Creamery in particular shows marked increase and still holds the premier position in the Maritime Provinces.

At least one new creamery will be established during the coming year, a new co-operative company being organized in Antigonish County, which will commence business in the spring, taking over the business of a number of small cheese factories that were operating during the past years. It is proposed here to make the creamery a co-operative centre for the buying and selling of many of the farm products in addition to the creamery work.

I spent, during the year, as much of my time as possible among the different factories, assisting the makers wherever possible in the manufacturing of a better quality of cheese and butter, doing the fortnightly or monthly testing when requested, held about 27 public meetings, discussing dairy problems with the people and visiting about 285 farm homes in the interest of the different factories and offering any suggestions I could in the care and handling of milk and cream.

I assisted judging the Dairy produce at the Provincial Exhibition at Halifax, and attended all the local Exhibitions in the western part of the province, judging the Dairy produce and spent the balance of my time discussing wherever possible many problems connected with the dairy work. I also assisted judging the milking competition at the Winter Fair at Amherst.

During the winter months, as much of my time as possible will be devoted to the dairy work in connection with the Agricultural College.

With your permisssion, I have arranged for a convention of the Dairymen in the province to be held during the present month, to endeavor to stimulate more hearty co-operation among the different factories and discuss many problems connected with the work.

There are many parts of Nova Scotia that appear to be well suited for co-operative Dairying where, as yet, nothing has been done. In fact nearly all of the agricultural parts of the province possess the requisites to make dairying the most successful part of farming, and, if the movement can be developed along co-operative lines, it would not only rapidly increase the fertility of the soil, give steady renumerative employment twelve months of the year, but would exalt the occupation of farming to a much higher degree and tend to make a happier contented rural population. But great care must be exercised in the establishment of new creameries or cheese factories to ensure that they will get enough support to make them profitable enterprises, and the time appears to be ripe when we should have some good effective dairy legislation to govern the different factories in existence.

During the fall, I prepared a number of Blue-prints of the floor plan of a modern equipped creamery that I think would be very suitable to the needs of the province and can furnish intending companies with copies of same.

On the following pages, will be found a detailed statement of the business done by each of the creameries and cheese factories during the year. The most noticeable gains, among the old factories, were at Scotsburn, Brookfield and the Fairview Farm Creamery at Somerset. Some of the other factories, owing to various reasons, show a slight falling off. The new creamery started at Yarmouth is already the second largest in the Province. The other new one, at River Hebert, has given a good account of itself only running a little over five months. The total value of the butter made was $130,-076.17, cheese $26,858.04, cream and ice cream sold $72,66.00. $8375.00 was spent in improvements and new factories.

In conclusion, I wish to express my appreciation for the encouragement you have given me throughout with my work and also to the different creamery and cheese factory men, and others throughout the province for the cordial way they treated me during my different visits with them.

All of which is respectfully submitted.

W. A. MacKAY.

Dairy Superintendent.

Report of Cheese Factories and Creameries.

COUNTY	NAME OF FACTORY, OWNER SECRETARY OR MANAGER AND P. O. ADDRESS.	No. of Patrons.	Lbs. of Milk Received	Lbs. of Cheese Received	Lbs. of Cheese made	Lbs. of Butter made	Value of Cheese or Butter made	Valve of Improvement made
Annapolis....	Lawrencetown B. & C. Mfg. Co., J. B. Jefferson, Secy, Lawrencetown......	70	502200	5000	35900	6000	7185 00	250 00
Antigonish...	Argyle, Geo. Vinten, Owner, Lower South River P. O..................	No	Report					
	Erinville, Geo. Vinten, Owner, Lower South River P. O..................	No	Report		.....	......	....	....
	Glassburn, Geo. Vinten, Owner, Lower South River P. O..................	No	Report		.....	.....	....	....
				Busi	ness	done 1911	about	same as
	Marydale, Geo. Vinten, Owner, Lower South River P. O..................	No	Report		.....	......	....	....
	Upper South River, Geo. Vinten, Owner, Lower South River P. O........	No	Report		.....	......	....	....
	Frasers Mills Cheese Factory, D. G Kirk, Owner, Antigonish...........	18	132349	......	12382	......	1702 52	....
Colchester....	Brookfield Creamery Co., R. B. McLennan, Owner, Brookfield.........	65	230000	95707	.....	30501	9000 00	200 00
	(Sold 16880 quarts sweet cream, 800 quarts Ice cream..................						5266 00	

Colchester....	Economy & Bass River B. and C. Co., S. H. Fulton, Secy., Little Bass River.	55	383670	36153	.....	25050	6760 00	....
	Glenholme Creamery, E. G. Jeffers, Owner, Glenholme..................	30	136687	50257	.....	18722	5258 15	....
	Great Village Creamery, T. D. Blackie, Owner, Great Village..............	35	452543	16945	.....	17401	5046 39	....
	8000 quarts cream sold.............						2000 00	
Cumberland..	Malagash Cheese and Butter Co., J. T. Treen, Secretary, Malagash Centre,	37	421624	......	41552	......	5671 54	25 00
	Cumberland Cooperative Creamery Co., Ltd......................... W. A. Landels, Secy., River Herbert..	...	......	50850	.....	14959	4188 59	3250 00
Kings.......	The Acadia Dairy Co., Ltd., A. M. Wheaton, Secretary, Wolfville.......	100	......	200000	.....	50000	13500 00	250 00
	The Acadia Canning & Creamery Co., G. R. Toole, Mgr., Kingston........	12	......	117265	.....	27454	7686 84	....
	Fairview Farm Creamery, Illsley Bros., Owners, Somerset................	45	......	128000	.....	32000	9000 00	....
Pictou.......	The Scotsburn Creamery Co., Ltd., Robt. T. Stewart, Secy., Scotsburn..	350	......	571935	.....	181513	49757 22	1000 0
Yarmouth....	Yarmouth Creamery Ltd., Fred E. Porter, Managing Director, Dayton.	140	......	184560	.....	66503	18078 98	3400 00

PART II.

Series of Articles on Swine Breeding.

SWINE BREEDING IN NOVA SCOTIA.

By M. Cumming

In previous Annual Reports issued from this office, we have, in addition to the usual business statement, included a series of articles on important agricultural subjects. Since 1907, the articles included in each year's report, have been confined to a single subject which, for the information of any new readers of our publications, we list below:—

The Report of 1907 included articles on "Sheep Raising."
" " 1908 " " "Dairying."
" " 1909 " " "Soils and Soil Cultivation."
" " 1910 " " "Orcharding and Gardening."
" " 1911 " " "Horse Breeding."
and the Report of 1912 will include articles on "Swine Breeding."

In 1911, a second and revised edition of the articles on "Dairying" was published. All the above publications may be obtained free on application to either the Secretary for Agriculture at Truro or the Secretary of Industries and Immigration at Halifax.

The Hog.

The Hog is not the most important animal on the Nova Scotia farm. But he does not rank far behind the others. Wherever the dairy cow reigns, the hog should always be found to turn to profitable account her skim and buttermilk and whey. Wherever refuse feeds accumulate, more especially from the home or hotel table, or from the potato and root and green crops of the farm, the hog will help to swell the profits. And where do not these conditions exist?

Nevertheless, there is a limit to the profitable feeding of hogs in this Province. Our grains and "short feed" are too expensive to make it profitable to feed pigs, unless under exceptional circumstances, solely on feed purchased from the mill or store. Only in the corn belt of the United States and like districts can the hog be fed in this manner.

We hope, in the following articles, which have been prepared by men of the Agricultural College staff, by hog breeders in our own province and by experts from other parts of Canada, to present the possibilities of as well as the limitations to hog raising in Nova Scotia and to give some details that may prove profitable to those already engaged in the industry and to others who may be contemplating this line of stock raising as a means of adding to the revenue from their farms.

The Hog in Nova Scotia.

The hog has been termed "the mortgage lifter" of America and, in those states where cheap corn is produced, the so called corn belt, he has well merited the term. Neither in numbers nor in relative importance does he stand as high in Canada as in the United States. Nevertheless, much food has he produced and many a dollar has he contributed to the pockets of the Canadian farmer and as our system of agriculture becomes more intensive, he promises to become a more and more important factor in the farm economy. Of about 58,000,000 pigs owned in North America, 95 per cent. are in the United States and 5 per cent. in Canada. In years to come, the proportionate number in Canada will be largely increased.

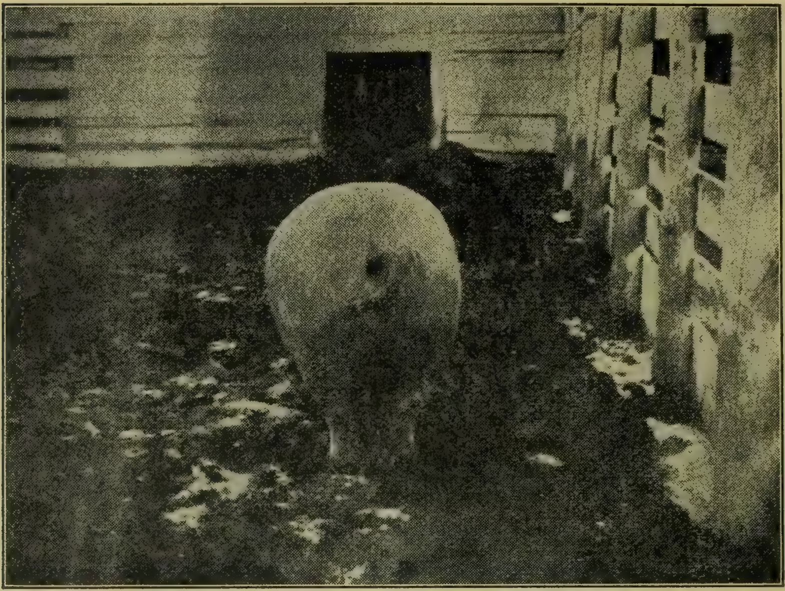
No animal consumes as much food in proportion to his weight as the hog and no animal will produce as much gain from a given amount of feed. Lawes and Gilbert, of the Rothamsted Station in England, ascertained that, per one hundred pounds live weight, the ox consumes 12.5 lbs. dry feed per week, the sheep 16 lbs. and the pig 27 lbs. What is more important, they determined that, for one hundred pounds of dry matter consumed, the ox produces 9 lbs. gain, the sheep 11 lbs. and the hog 23.8 lbs. Without reference to the character of the feed, we therefore, observe that the hog is by far the most economical meat making machine at the farmer's disposal.

Unfortunately, we cannot, in practice, set aside the character of the feed for there is a big difference in the cost of the food consumed by the cow or the sheep and that consumed by the hog. The two former can make use of large quantities of such cheap fibrous foods as grass, hay, straw, etc. The pig has neither the capacity for nor the ability to digest much of this class of food to advantage. He must be fed mainly on more concentrated non-fibrous foods and these are the expensive foods in Canada generally and in the Maritime Provinces in particular. However, every farm has its refuse gra in and other fodders, its waste in the house, its skim and buttermilk, which mixed with the higher priced corn and middlings and barley, etc., make hog feeding profitable. Besides, the hog can, to good advantage, be fed green clover and peas and rape and vetches and other succulent feeds which will reduce the quantity of high priced feed required. The pity is that there are not many more being raised and fed on our farms.

The Type of Hog for Nova Scotia.

In the export markets of the world, Canada is noted for its bacon; the United States is equally noted for its fat pork, and in general, it is recognised that the common hog of Canada is the bacon hog and that of the United States the fat or lard hog. Most of the bacon exported from Canada is produced in Ontario and Quebec. Nova Scotia exports very little. Her pork goes to supply the local market in the towns and cities and the market afforded by the lumber camps and the fishing and other crafts of the sea. The local markets have acquired a taste for bacon and for the leaner classes of pork. But the lumberman and fisherman market is, for the most part, content with a heavier, fatter class of pork. Even in this market, the demand is changing and a preference expressed for a less heavy class of pork approximating the bacon standard. The result of it all is that Nova Scotians prefer a medium class pig leaning towards the bacon type. Before proceeding further we should more clearly define what we mean by bacon type and lard type.

Lard Type. In general, the lard type hog is a broad, deep, blocky animal closely approximating a parallelogram with the corners slightly rounded. The snout, neck and head are relatively short and the legs short and set well apart. The back is very broad and the hams extra well filled out. Such a type supplies the largest proportion of high priced meat such as ham and choice cuts along the back with a fair quality of bacon from the side. The proportion of fat to lean is very large. The ideal fat hog ready for market weighs about 250 lbs., which is considerably heavier than the corresponding weight of the bacon hog.



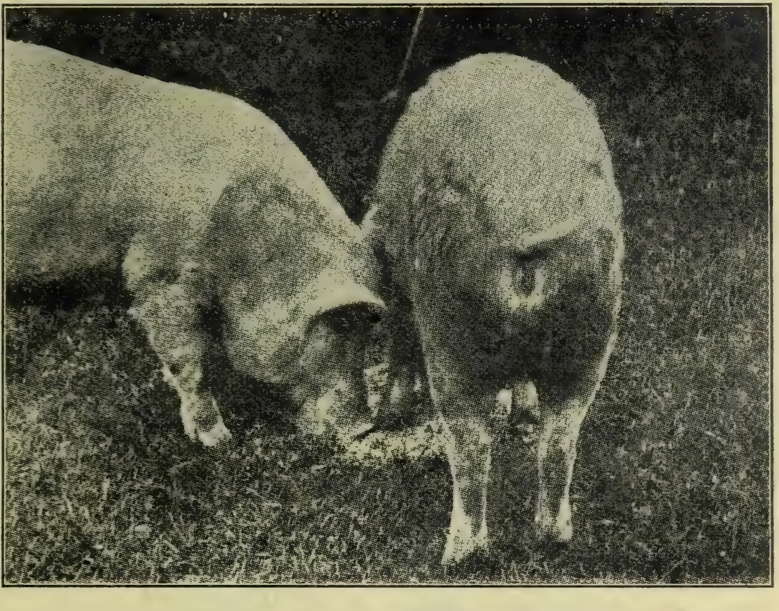
As a lard or fat hog appears from rear view.

Courtesy G. E. Day.

Bacon Type. Canadian packers make a speciality of the "Wiltshire Side," which produces that perfection of bacon, which the English customer appreciates so highly. The bacon hog of Nova Scota should produce the same quality of bacon side. Such a side is produced from a pig weighing alive somewhere between 160 and 220 lbs., the ideal being 180 lbs.

It is quite possible to have the hog of this weight either too thin or too fat. The proper condition is such that, when the carcass is split down the back, the layer of fat along the back should run from an inch to an inch and a half in thickness and should be as uniform in thickness as possible from the loin to the neck. The most valuable cuts are those between the shoulder and the ham. The ham itself is slightly cheaper as also are the under portions, and the neck and shoulders are decidedly cheaper.

To produce a market hog of this type, a sow or boar should differ from one of the lard type in being longer from the back of the shoulder to the hips; the body should be deep rather than wide, the shoulder and hams should be trimmer and not so thick; the neck should be longer and cleaner cut and the jowl lighter, as also the head and snout; the legs should be slightly longer and not set so far apart. In general, the bacon hog is longer, narrower and trimmer than the fat hog. Nevertheless, these points must not be gained at the expense of constitution and feeding qualities—a danger that has not been altogether avoided by every bacon hog breeder. Great depth of side and reasonable thickness through the heart must be insisted upon.



As a bacon hog appears from rear view.

Courtesy G. E. Day.

The following scales of points quoted from "Swine" by G. E. Day, will convey to the student a more detailed idea of the characteristics of swine of these respective types.

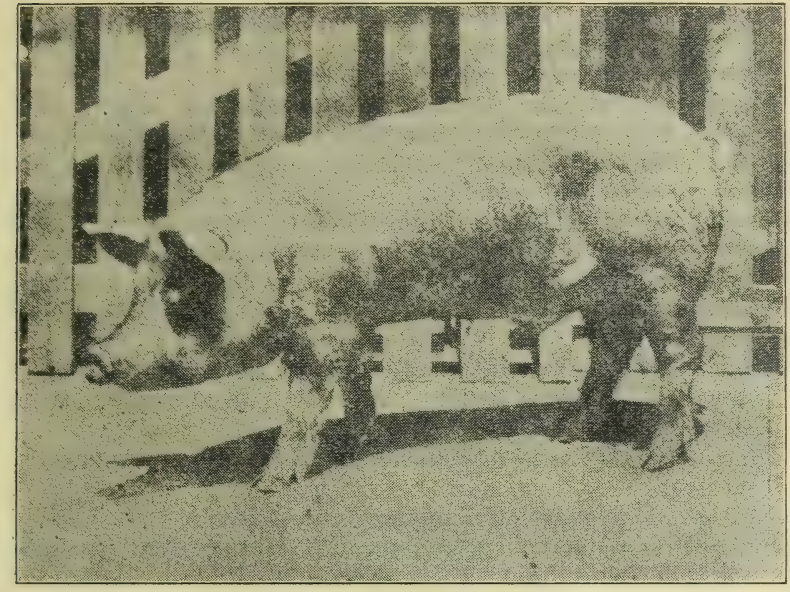
SWINE OF FAT, OR LARD TYPE.

Description and Scale of Points.

A. General Appearance:

Size—Well developed for age	5
Form—Deep, thick, smooth, low set, good length but compactly built, standing on well placed legs. Top line straight, or slightly arching; under line, straight; belly trim and neat	10
Quality—Hair, fine; skin, smooth, showing no tendency to wrinkle; bone, clean and fine; flesh, smooth and mellow, but showing no flabbiness	10
Condition—Deeply and evenly covered with flesh, but not overdone for the purpose for which the animal is intended	6

Style—Active and sprightly, walking without a swaying movement, and standing well up on toes. Breeding animals should show strong character	4
B. **Head and Neck**:—	
Snout—Moderately fine	1
Face—Broad between eyes; poll, broad and full	1
Eyes—Good size, full and bright	1
Jowl—Full, broad, deep, smooth, and firm, carrying fulness back near to point of shoulder	2
Ears—Medium size, fine and soft	1
Neck—Short, thick and deep. Rounding and full from poll to shoulder top	2
C. **Forequarters**:—	
Shoulders—Broad and compact on top, deep, well fleshed, blending smoothly with neck and body	6
Breast—Wide, deep and full	3
Fore Legs—Set well apart, short, tapering, and straight; pasterns, upright; bone, clean and fine; feet, medium size and strongly formed	3
D. **Body**:—	
Back—Broad, straight or very slightly arched, medium length, uniform width from shoulder to ham, thickly fleshed, even and smooth, without creases or projections	8
Loin—Broad, strong, full, and thickly and smoothly fleshed	5
Ribs—Long and well sprung	4
Side—Medium length, deep, smooth, even between shoulder and ham	6
Heart Girth—Large, full back of shoulder, and deep and full at fore flanks	5
Flank—Deep and full	2
E. **Hindquarters**:—	
Rump—Same width as back, long, smooth, slightly rounded from loin to base of tail	4
Ham—Broad, deep, heavily fleshed, plump and, reasonably smooth; flesh carried well down to hock on inside as well as at rear	8
Hind Legs—Short, straight, set well apart and squarely under body; bone, fine and clean; pasterns, strong; feet, medium size and strongly formed	3
Total	100



A model bacon pig ready for market.

SWINE OF BACON TYPE.

Description and Scale of Points.

A. **General Appearance**:—	
Size—Well developed for age	5
Form—Long, smooth, all parts proportionately developed so as to give the impression of a well-balanced strongly built animal. Top line, strong, under line; straight; belly, trim and neat	10
Quality—Hair fine; skin, smooth, showing no tendency to wrinkle; bone, clean and strong but not coarse; flesh firm and smooth, with no flabbiness at jowl, fore-flank, belly or ham	10
Condition—Well covered with firm flesh, especially along back and loin, but not heavily loaded with fat	6
Style—Active and sprightly, walking without a swaying movement, and standing well up on toes. Breeding animals should show strong character	4
B. **Head and Neck**:—	
Snout—Medium length and moderately fine	1
Face—Broad between eyes: Poll broad and full	1
Eyes—Good size, full and bright	1
Jowl—Fair width and muscular, but very neat showing no flabbiness	2

Ears—Moderately thin, and fringed with fine hair	1
Neck—Medium length and muscular, but possessing no tendency to arch on top.	2
C. **Forequarters**:—	
Shoulders—Smooth, somewhat rounded from side to side over top and very compact; no wider than back, and not running back on side so as to shorten distance between shoulder and ham	6
Breast—Good width and full	3
Fore Legs—Set well apart, medium length and straight; pasterns, upright; bone, clean and strong; feet, medium size and strongly formed	4
D. **Body**:—	
Back—Medium width, rising slightly above the straight line, and forming a very slight arch from neck to root of tail	6
Loin—Wide as rest of back, strong and full, but not unduly arched	5
Ribs—Good length and moderately arched	4
Side—Fairly deep; long and smooth, and straight between shoulder and ham; a straight-edge laid over shoulder point and ham should touch the side throughout	8
Heart Girth—Full, but not flabby at fore-flanks, filled out even with side of shoulder; there should be no tucked-up appearance back of forelegs, nor droop back of shoulder top	5
Flank—Full and low	2
E. **Hindquarters**:—	
Rump—Same width as back; long and slightly rounded from the point above hips to tail, and somewhat rounded from side to side over top	4
Ham—Full without flabbiness; thigh, tapering towards hock without wrinkles or folds, and carrying flesh well down towards hock	6
Hind Legs—Medium length, hocks set well apart; but not bowed outward; bone, clean and strong; pasterns, upright; feet, medium size and strongly formed	4
Total	100

The lard hog breeds are the Poland-China, Duroc-Jersey, Chester White and most strains of the Berkshire. The bacon breeds are the Yorkshire, Tamworth, some strains of the Berkshires and there are strains of the so-called lard hog breeds (possibly as we have them in Nova Scotia, the Chester White more than the others), which make very good bacon.

There are several other breeds of hogs found in small numbers in Canada to which we will briefly refer in subsequent pages.

BREEDS OF HOGS.

By M. Cumming.

In order to give the reader a general idea of the character of the breeds of hogs we present in the following pages a brief history of the genus hog and a short detailed history and description of the best known breeds. In regard to the latter we may premise that the history of the origin of the various breeds of swine has been very poorly preserved. Much of what we have is conjecture rather than fact. For this reason we will give but the most general facts relative to the history and confine ourselves largely to a description of the breeds as they exist at the present time.

The Domestic Hog.

The domestic hog is a descendant of the wild hog found indigenously in Europe, Asia and Northern Africa. From this wild species there developed two well marked species, the one the domesticated hog of Europe, (Sus scrofa), and the other the domesticated hog of the Orient, (Sus Indicus). The former differed little from its ancestors, being large, coarse and lean and not easily fattened. It was simply a tamed wild hog. The latter (Sus Indicus) was smaller, finer boned, neater in appearance and easier fattened. There were several strains, the Chinese, the Siamese, and the Neapolitan (the hog of Naples, Italy), but all possessed about the same characteristics.

Modern breeds have, for the most part, been developed by a crossing of the large coarse European species with the finer, easier fattened Oriental species. There are, however, some breeds that carry very little Oriental blood and that have been bred up from the European species almost solely by selection. In general, the bacon breeds, the Yorkshire, Tamworth, etc., are of this breeding, while the lard hog breeds carry larger infusions of Oriental blood.

The development of all the breeds which we have today is largely a modern one most of the improvement having been effected in the latter half of the Nineteenth Century. The general direction of improvement, whether brought about by selection or crossing has been the diminishing of size, getting rid of coarseness of, and securing earlier maturity than the native wild species. The foundation of this improvement of hogs, as of most of the other breeds of stock, was largely laid in Great Britain, but, in the United States, there have been developed several new and very excellent breeds that are recognised as distinctly American.

The Bacon Breeds.

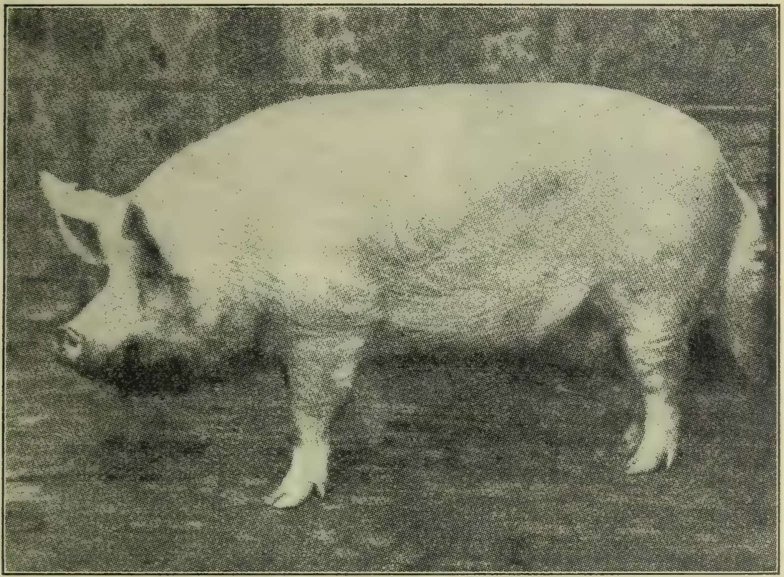
THE YORKSHIRE.

Three breeds of White Hogs are raised in England. They are 1. The Large White, now known in America as the Large Yorkshire or Improved Large Yorkshire; 2. The Middle White, or Medium Yorkshire; and 3. the Small White, known in America as the Small Yorkshire, one strain being called Suffolk, which is simply an off shoot of this Small White. Of these three, the only breed that has become at all numerous in America is the Large White or Large Yorkshire. The Small White is altogether too fine a breed and is besides of the fat type. A good deal of the same criticism applies to the Middle Yorkshire which, as the name implies, is about midway in type between the Large White and the Small White.

THE LARGE OR IMPROVED YORKSHIRE.

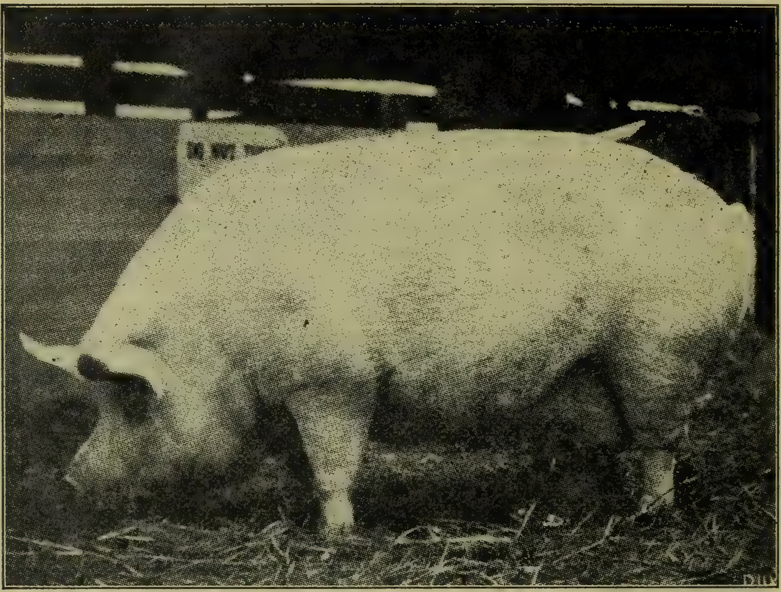
History.—From time immemorial, large white hogs have existed in England. In 1789, George Culley, a noted authority, writing of these said; "There was a breed of large white pigs with very large ears hanging over their eyes, which a few years ago were very common in many parts of Yorkshire and Lancahire. They were plain, thin, awkward hogs with very long legs" etc. This was no doubt the parent stock of the present Large Yorkshire. Improvement seems to have been brought about with little if any use of foreign blood except in so far as resort was had to Middle and Small White blood. It is generally accepted that the first improvement was effected by using some White Leicester blood (an old English strain) followed by the use of some Small and Middle Yorkshire infusions ofblood. But selection within the breed itself was the most potent agent.

Types.—There are several types of Large Yorkshires. Many are familiar with a type that possessed very short upturned noses accompanied by a rather heavy jowl, neck and shoulder, which are very objectionable from a bacon standpoint. This type is not found in as large numbers as formerly. Another type, that was once well known in Nova Scotia, was characterized by a long, scrawny neck, narrow chest and long coarse boned legs. This strain of Yorkshires were poor feeders and are responsible for the fairly prevalent idea that Yorkshires are "hard feeders." The most desirable type is a medium between these, a hog possessing the length but also with thickness enough of chest and body and shortness of leg to denote an easy feeder. This is the kind of Yorkshire which the leading Canadian breeders are today producing. Some English breeders, in attempting to produce this type, have used an excess of Middle and Small White blood with the result of producing hogs of insufficient growth, too fine boned and carrying too much fat in proportion to lean. For this reason, the breeder of Large Yorkshires should familiarise himself with the character of the breed. He must aim at quality but at the same time must recognise that too fine neat ears, head and bone indicate too much Small Yorkshire blood, and, therefore, the liklihood of establishing the undesirable characters of that breed.



A Champion large Yorkshire Boar.

The typical Yorkshire should possess all those characteristics which have been described under bacon type. In size matured boars should weigh, in fair condition, 700 lbs. or more and sows about 50 lbs. less. Pigs at six months, in moderate condition, should weigh about 200 lbs. Both the skin and hair should be white (black hairs disqualify but blue or black spots on the skin, while objectionable, cannot always be avoided and do not disqualify). The head should be typical of the Large



A Champion Yorkshire Sow.

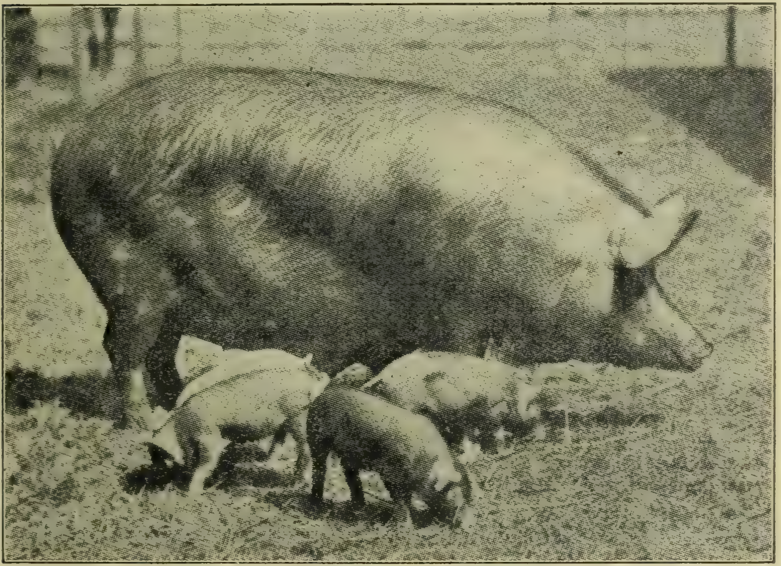
Yorkshire as described in the foregoing. being of medium to large size, the snout straight, the face slightly dished between the eyes, the poll wide, the jowl of good width and muscular but neat and free from excessive fat and the ears large, preferably erect and not drooping, and inclined slightly forward.

Yorkshires are more numerous than any other breed of hogs in Canada. They are used exclusively in Denmark for crossing on native sows to produce the highest quality of bacon, and wherever in the world an attempt is made to produce good bacon, the Yorkshire will always find a place. A strong point in their favor is that the sows usually produce large litters.

THE TAMWORTH.

The Tamworth takes its name from Tamworth in Staffordshire, England, the breed having been developed in that and adjoining counties. Authorities state that the Tamworth was originally a very leggy, narrow hog and that improvement has been effected largely within the past thirty to thirty-five years. It is claimed that this improvement was brought about by selection within the breed and not by any out crosses and that, therefore, the Tamworth is one of the purest of breeds.

The Tamworth is the sole English representative of the red haired or sandy pig. To be exact, the color is described as "a golden red hair on a flesh colored skin free from black," Black spots in both hair and skin frequently occur, but they are severely discounted although they do not absolutely disqualify. In general Tamworths are of the same bacon type as the Yorkshire. The main differences, setting aside color, are that the head is narrower and longer and the snout more pointed. The jowl, neck and shoulder are also somewhat narrower and trimmer in appearance. In fact, there is generally a narrower appearance about the whole front of the Tamworth than of the Yorkshire. Accompanying this conformation, there is frequently a lack of development of hams, which deficiency is being largely overcome by the best breeders. In size, the Tamworth and Yorkshire are about equal and the Tamworth like the Yorkshire is a very prolific breed.



A First Prize Tamworth Sow.

Some twelve or more years ago, a considerable number of Tamworths were brought into Nova Scotia but, whether this imported stock was inferior or whether our farmers did not take to the type and color, the fact remains that the original strain gradually died out and there are today few, if any, representatives of the breed in this country.

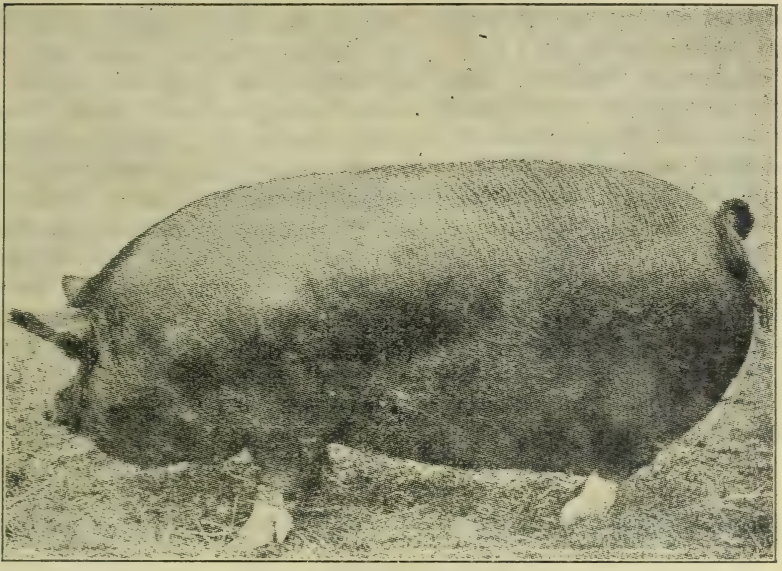
THE BERKSHIRE.

The Berkshire is the oldest recognised pure breed of British swine. The breed is named after the Shire of Berks. It is one of the best known and most widely distributed of all the breeds of swine. In 1789, Culley, a then authority on live stock, wrote "the most numerous breed of hogs in this island is that excellent kind generally known by the name of the Berkshire pigs. * * * They are in general reddish brown, with black spots upon them, large ears hanging over their eyes, short legged, small boned and exceedingly inclined to make fat readily." He refers to them as a heavy breed, mentioning one sow that weighed over 1130 lbs. Other authorities do not agree with Culley in regard to the small bone, and certainly the weight they are said to have attained would rather make one accept Laurence's statement, who, writing in 1790, agrees with Culley's description except as applied to the bone which, he says, was large.

Quite early in the nineteenth century Chinese, Siamese and Neapolitan blood (both white and black pigs) was introcuded resulting in a refinement of bone and body and the production of an easier fattening earlier maturing sort. At the same time, the color of black with white tips became fairly well established.

No other breed is so widely distributed as the Berkshire, the breed having found its way to all parts of Canada and the United States, and many countries of Europe, South America, South Africa, Australia, etc., etc. Not only has it been preserved in its pure form but it has had a potent influence in laying the foundation of as well as improving more recent breeds.

Types.—As bred in Canada, the Berkshire is generally intermediate in form between the bacon and lard types, though as a rule it comes nearer the latter than the former. In the United States, the lard type of Berkshire has been developed, it being generally admitted, however, that the breed carries more lean in proportion to fat than any of the distinctively American breeds. A general tendency amongst the breeders of both types, in the effort to secure early maturity, has been to develop too fined boned Berkshires. Such hogs are not only too small but the females usually produce too small litters. It is this fact, more than anything else, that has led many farmers to prefer a Berkshire-Yorkshire or a Berkshire-Tamworth cross to the pure breed.

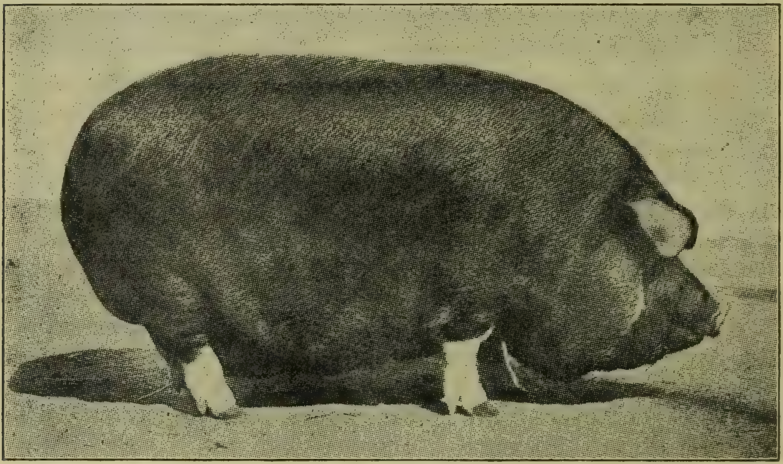


A Champion Berkshire Sow.

Description.—The Berkshire is, in general, a medium sized pig. In color, both the skin and hair are black (but occasionally showing a tinge of bronze or copper color) with white on feet, face, tip of tail and an occasional splash on the body. The face is somewhat shorter, broader and a little more dished than that of the Yorkshire. The ear is finer and carried very erect (in contrast to the Poland China). The jowl, neck and shoulders are all broader and more heavily developed than those parts in the Yorkshire. Also the body is shorter and more compact, the back broader, the hams fuller and the legs shorter. In nearly all of these particulars, the Canadian type of Berkshire comes about midway between the fat American type and the Bacon type, leaning rather more to the former. There is no earlier maturing breed than the Berkshire. They are very adaptable, doing very well both on pasture and on pen feeding. As a rule the sows are not as prolific as those of the Yorkshire or Tamworth breeds.

THE POLAND CHINA.

The Poland China is an American breed of the lard hog type. The breed originated chiefly in the counties of Warren and Butler in the Miami Valley in the State of Ohio. For many years, different local names were applied to the breed. Partly because of this and partly because of a difference of opinion as to what blood was actually used in the development of the breed, bitter controversies occurred until the name was finally settled on by the National Swine Breeders Convention, held at Indianapolis in 1872. The name Poland China indicates that two of the most prominent strains of blood used in laying the foundation of this breed were the hogs of a Polander named Asher and the so-called China hogs brought in by the Quakers of Pennsylvania in 1816. The Polander's hogs were imported from England and seem to have been the Sandy Berkshires that constituted the foundation of the present Berkshire breed. The China hogs were represented as being of pure Chinese blood and were of a rather finer boned type than the former. Several other breeds entered into the foundation stock among which were the Russia, the Byfield and later a Berkshire cross introduced about 1835 and an Irish Grazier cross used about 1839. While the breed was of composite origin it has been kept pure since 1845.



A Champion Poland China Sow.

Description.—The Poland China is the ideal lard type, very compact, broad, low set and early maturing. The head is much shorter and broader than the Yorkshire, the ear medium size and drooping, the jowl very broad and full, the neck extremely short and thick and the whole body very deep, wide and low set. No breed of hogs carries better developed hams. The bone is inclined to fineness—too much so it is now claimed by the best breeders—the result of which is that many representatives do not stand up well on their feet and do not attain that size which the breed was formerly characterised by. In color the Poland China has the same markings as the Berkshire viz:—black bodies with white tips. Like several other breeds which have been developed for early maturity and easy fattening qualities, the Poland China is not as prolific as some of the more rangy breeds such as the Yorkshire.

While no other breed has attained the same popularity in the United States, Poland Chinas have never been extensively bred in Canada; nor are they likely to be. For, while the Poland China is pars excellence the hog for the production of fat pork it will never build up nor maintain a reputation for first class bacon.

THE CHESTER WHITE.

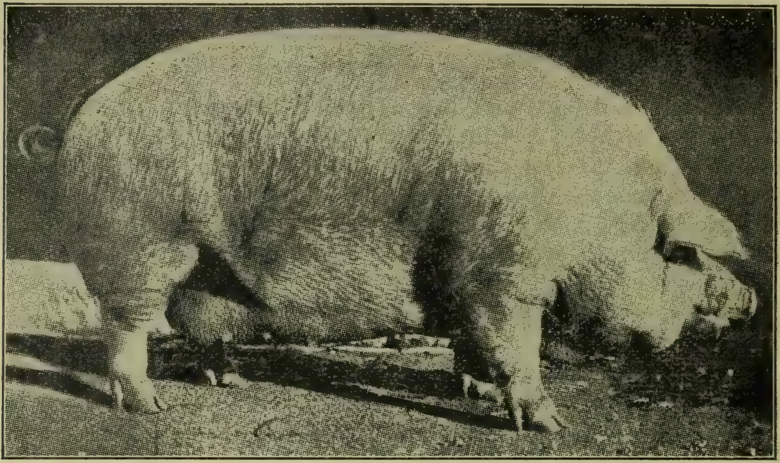
The Chester White is also an American breed of the lard type. Historically there are three strains of the Chester White. 1, the original Chester White; 2, Todd's Improved Chester White; 3, the Ohio Improved Chester White. Of recent years these strains have all been merged into one breed, the Chester White.

The original Chester White originated in Chester County, Pennsylvania, whence the name. They seem to have sprung from two white pigs of an old English strain very similar to that from which the Yorkshire sprung, that were imported from England about 1818, and some English bred White Chinese hogs that were brought, about the same time, to Delaware County, Pennsylvania. These two breeds together with their offspring crossed among themselves and upon other large, slow maturing, white hogs brought to Pennsylvania by the Quakers about 1812, constituted the foundation of the Chester White breed. Subsequent developement by selection lead to improvement. The result was the Chester White, generally admitted to be the largest breed of hogs produced in the United States. As an example of the size of this strain, one weighing 1300 lbs. was exhibited at the Centennial Exhibition.

About 1834 and for over thirty years subsequently, several men of the family Todd, living in the State of Ohio, by the use of some strains of old English and American hogs, crossed with the Chester White as already developed produced a superior strain of hogs known as Todd's Improved Chester White.

The Ohio Improved Chester White (O. I. C.) is the product of the breeding of L. B. Silver of Ohio, who secured the foundation stock among the Chester Whites of Pennsylvania and improved them by selection.

These strains are now practically united into the one Chester White,a breed very widely distributed not only in the United States but also, to some extent, in Canada where the breed has become more popular than any of the other American breeds.



A Prize Winning Chester White.

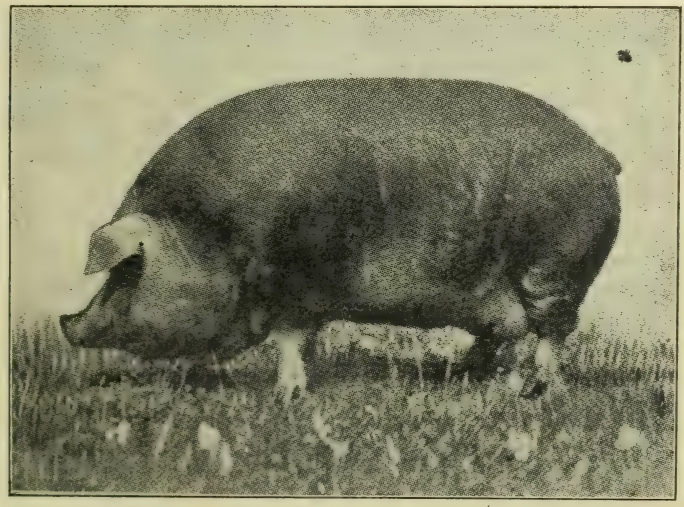
Description.—The Chester White was formerly the largest breed in the United States but its size has been somewhat reduced in the effort to produce an easier fattening, earlier maturing type of hog and it is now of about the same size as the Poland China. The hair and skin of the Chester is white. Black hairs disqualify but bluish spots in the skin, though objectionable, are admissible. The hair is generally more curly than that of the Yorkshire. The head is of medium length (longer than that of the Poland China and shorter than that of the Yorkshire). The face is straight or but very slightly dished with a nose a little longer and more pointed than that of the Poland China. The ear droops but is somewhat heavier and "breaks" farther from the tip than in the Poland China. In general conformation, the Chester is of the same lard type as the Poland China, although the hams are not always quite as well developed. There is also a type of Chester White bred in Canada much longer than any of the other American breeds and that produces very fair bacon. This accounts for the Chester White being the most popular of the American breeds in Canada. If there is any failing more than another that sometimes crops out in the Chester, it is a tendency to rather weak bone that is evidenced by not standing up strongly on their toes. As we have them in Canada, the Chester is the most prolific of any of the lard hog breeds. The Chester is an exceedingly satisfactory hog for pen feeding and does very well as a grazer although, like any other of the white breeds, their skin is liable to sun scald and, for this reason some, of the other breeds are preferred in those parts of America where hogs are allowed to depend for a considerable part of their living upon grazing. Nevertheless, even in this respect the Chester is but slightly, if any, inferior to the other American breeds.

THE DUROC JERSEY

The Duroc Jersey is also an American breed of the lard type. It differs from the preceeding breeds mostly in color—being red.

The exact origin of this breed is not known. Red pigs have existed in the United States for a great many years. They are supposed to have sprung from different sources viz. the Guinea breed of West Africa, brought over by slave traders, also Spanish red hogs, Portugese red hogs, and finally some of the earlier sorts of Berkshires, which, it may be remembered, were sandy in color. Possibly, all these strains contributed their quota. Certainly, there was produced in the early part of the Ninteenth Century in New Jersey a breed of red hogs that gained considerable prominence, known as Jersey-Reds. They were a large, lop-eared, somewhat long and coarsish type of hog.

Another strain of red hogs was developed in Saratoga County, New York. by crossing a red hog on the native hog of that country. To this strain the name Duroc was applied, being derived from the name of a famous stallion owned in that county.



A Great Duroc-Jersey Sow.

About 1877, the breeders of these two classes of red hogs got together, agreed on a type and applied the name Duroc

Jersey to their breed. This breed is now fairly well distributed through the United States and a few specimens have found their way to Canada, where, however, they have gained little popularity although they seem to be considerably sought after in parts of Western Canada.

Description.—The Duroc Jersey is a medium sized breed very similar in this respect as well as in type to the Poland China and the Chester White. Some specimens are very large but there is a general tendency to the production of a finer (too fine) size than formerly. The head, except in color, is very similar to the Poland China. The ear is similarly drooped and the body is of the same well-marked lard type with well filled hams. The popular color is cherry red but yellowish and chestnut shades are quite common. A few black spots on the belly or the legs do not disqualify but are objectionable; such marks on any other part of the body are very serious objections.

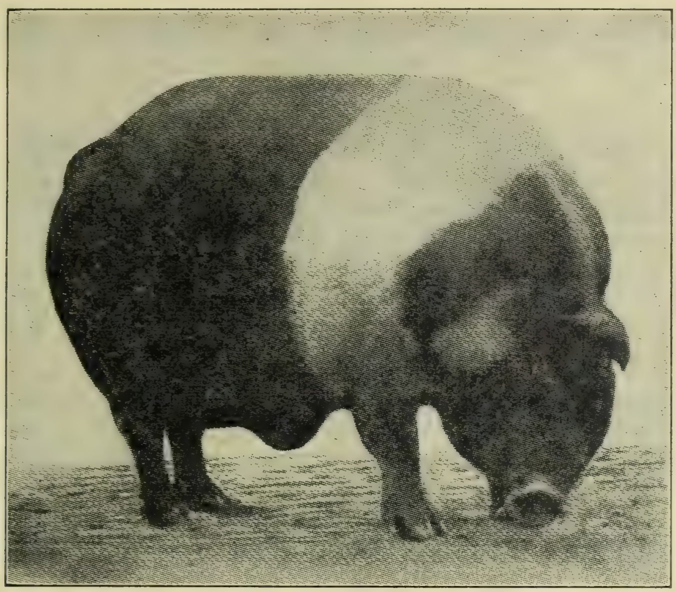
Duroc Jersey breeders claim that their hogs are not only good pen feeders but are pars excellence the grazers of the United States. Certainly they stand the sun better than the white breeds. They are about equally prolific with the Poland China.

OTHER BREEDS.

The foregoing are the most important breeds of swine in America today but there are other breeds of which a few specimens are to be found mostly in the United States but, to some extent, in Canada. Of these, we have already, in our introduction to the history of the Large Yorkshire, treated of the Middle Yorkshire and the Small Yorkshire and the Suffolk. Other breeds, which we will just refer to are the Essex, the Cheshire, the Hampshire or Thin Rind and the Victoria.

The Essex is a small, easily fattened hog of the lard type. It originated in England. The breed is solid black in color, no white being admissible. It is at present too small and fine to make any head way in Canada or the United States, in each of which countries there are only a very few herds. The breeders are aiming at correcting this fault and we may, in future years, know more of the Essex breed of hogs.

The Cheshire is a white American breed of the lard type which originated in Jefferson County, New York about 1855. It is believed to be a derivative of the Yorkshire. It has not attained much popularity outside of a restricted territory in New York State. A few individuals of this breed were brought to Nova Scotia some twelve or fifteen years ago but they were not considered equal to our own hogs and, as far as we are aware, the strain has disappeared.



A Champion Hampshire Boar.

The Hampshire was originally called the Thin Rind and is an American product. It is claimed to be a bacon breed but is really about intermediate between the lard and bacon type. The fashionable color is black extremities with a white belt, from four to twelve inches wide encircling the body and including the fore legs which should be also white. The breed is rather small than any of the American breeds and is not very largely distributed. Only a very few have come to Canada.

The Name Victoria has been applied to two different types of swine, each of different origin. One is known as the "Curtis Victoria" and was introduced by Col. Curtis of Saratoga County, New York, about 1850 and developed by crossing native hogs of Irish Grazier blood with the Byfield and by subsequent crosses with the Yorkshire. The other is known as the "Davis Victoria" and was obtained by breeding together Berkshires, Poland Chinas, Chester Whites and Yorkshires by G. F. Davis, of Indiana about the year 1870. Most of the Victorias trace back to the Davis stock. The Victoria is a white hog resembling very much in appearance the Middle White, or Yorkshire. It has sometimes been called the White Berkshire. As far as we know, there are none in Canada.

REGISTRATION OF BREEDS OF SWINE IN CANADA.

By M. Cumming.

All breeds of swine in Canada are now registered in the Canadian National Records. Those interested in the registration of pure bred swine should therefore communicate with the Accountant, National Live Stock Records, Ottawa, Ont., who will supply the necessary blanks for registration and give such information as may be needed. The same recommendation is made to those who contemplate importing breeds of swine from any other country.

The following Rules of Entry, published under the authority of the Dominion Swine Breeders Association, will prove useful to those seeking to register either home bred or imported hogs.

Canadian National Records.

Dominion Swine Breeders' Association.

RULES OF ENTRY.

The following animals may be admitted to registry:—

1. Berkshires:
   - (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   - (*b*) Animals recorded in the British Berkshire Herd Book.
   - (*c*) Animals recorded in the American Berkshire Record, in which case all ancestors back to and including ancestors imported from Great Britain must be recorded.
2. Yorkshires:
   - (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   - (*b*) Animals recorded in the Large White Section of the English National Pig Breeders' Association Herd Bood.
   - (*c*) Animals recorded in the American Yorkshire Record, in which case all ancestors back to and including ancestors imported from Great Britain must be recorded.
3. Tamworths:
   - (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   - (*b*) Animals recorded in the Tamworth Section of the English National Pig Breeders' Association Herd Book.
   - (*c*) Animals recorded in the American Tamworth Swine Record, in which case all ancestors back to and including ancestors imported from Great Britain must be recorded.

4. Essex:
   (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   (*b*) Animals imported from Great Britain bred by reputable breeders.
   (*c*) Animals recorded in the American Essex Swine Record.
5. Poland China:
   (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   (*b*) Animals recorded in the following United States Poland China Records:—American, National, Southwestern or Standard.
6. Chester White:
   (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   (*b*) Animals recorded in the O. I. C. Record (United States.)
7. Duroc Jersey:
   (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   (*b*) Animals recorded in the American Duroc Jersey Record or in the National Duroc Jersey Record.
8. Hampshire:
   (*a*) Animals the sires and dams of which are recorded in the Dominion Swine Breeders' Record.
   (*b*) Animals recorded in the American Hampshire Record.

Applications must state name and sex of animal to be recorded, number of pigs in the litter, date of birth and name and registration number of the sire and of the dam.

Applications must be signed by the owner of the dam when litter was farrowed.

Dams must appear on the records of the Dominion Swine Breeders' Association as the property of the person signing.

The owner of the sire must sign certificate of service on the application form. Sires must appear on the records of the Dominion Swine Breeders' Association as the property of the person certifying service.

The breeder of an animal is the owner of the dam at the time she was bred. The first owner is the owner of the dam at the time the animal was farrowed.

No application will be considered until all fees are paid.

Application for transfer of ownership must be made on the regular forms supplied. If application is for a female and she has been bred, service must be certified on the transfer application.

Applications for the registration of imported animals either from Great Britain or the United States must be accompanied by the foreign certificates of registration, which must show the Canadian importer's ownership.

To complete pedigrees of United States bred Yorkshires, Berkshires or Tamworths all ancestors back to and including those imported from Great Britain must be recorded in the Dominion Swine Breeders' Record, for which the usual registration fee is charged.

Fees

Membership fee is $2.00 for the calendar year.

Registration Fees:—

To members each registration	$ .50
To non-members each registration	1.00
Transfer of ownership, each	.25
Duplicate certificates, each	.25

Address all correspondence and make all fees payable to—

Accountant National Live Stock Records,
Ottawa, Ont.

The following table is interesting as showing the number of individuals of the various breeds which have been registered in the Canadian National Records up to Dec. 1, 1912.

Breed	Number.
Berkshire	25326
Yorkshire	41903
Tamworth	9295
Chester White	10012
Duroc Jersey	1594
Poland China	3377
Essex	272
Hampshire	739

WHICH BREED?

By M. Cumming.

The question is often asked, "which is the best breed of swine?" This question is half answered when it has been settled whether fat pork or bacon is to be produced and as, there is no question that throughout the greater part of Canada bacon is and will continue to be the most important pork product, it is likely that it will be agreed that the best breed for Nova Scotia should be at least a fairly good bacon breed.

Our people do not relish heavy fat pork as they do the leaner bacon and besides we have not the large market for lard and oleomargarine (artificial butter) which is afforded the hog breeder of the United States. If we export, we cannot compete with the more cheaply produced fat pork of the United States and we must specialise in the bacon market where we are not in direct competition with the breeders of the United States and where, in any case, our product receives a higher price than is paid for fat pork. The local Nova Scotia market, as already stated, is not so exacting in its demand for the highest class of bacon but it does require a hog leaning strongly to the bacon standard. We think, therefore, we may settle the fact that the Nova Scotia breeder must produce a hog largely of the bacon type.

There are those who would agree with the conclusion arrived at in the foregoing paragraph but who claim that the more lengthy bacon type of hog is a harder feeder than the shorter more compact lard type and, therefore, consider that although the demands of our market are best met by a bacon type of hog, yet the feeder will make more money from one of the lard type. Fortunately we have some facts to present which prove conclusively that hogs of the proper bacon type are just as easy feeders as those of the lard type and that the question of easy feeding is not so much a question of breeds as of the type of the individual pig that is being fed.

At the Ontario Agricultural College and at the Iowa State College extensive series of experiments were carried on in the feeding of hogs of different breeds. We report below the result of each of five experiments carried on at Ontario and of each of three experiments carried on in Iowa. We suggest that the reader take each experiment individually and observe whether there is any constancy in the standing of the breeds. The tables show the breeds ranked in order of economy of gain for each experiment.

Ontario Experiments.

Breeds Arranged in Order of Economy of Production.

1st Experiment	2nd Experiment	3rd Experiment.
1. Berkshire	1. Berkshire	1. Yorkshire
2. Tamworth	2. Tamworth	2. Berkshire
3. Poland China	3. Poland China	3. Duroc Jersey
4. Duroc Jersey	4. Chester White	4. Tamworth Chester White
5. Chester White	5. Yorkshire	
6. Yorkshire	6. Duroc Jersey	6. Poland China

4th Experiment.	5th Experiment.
1. Berkshire	1. Berkshire
2. Tamworth	2. Yorkshire
3. Yorkshire	3. Duroc Jersey
4. Chester White	4. Chester White
5. Duroc Jersey	5. Tamworth
6. Poland China	6. Poland China

Iowa Experiments.

Breeds Arranged in Order of Economy of Production.

1st Experiment.	2nd Experiment.	3rd Experiment.
1. Duroc Jersey	1. Duroc Jersey	1. Yorkshire
2. Yorkshire	2. Yorkshire	2. Poland China
3. Tamworth	3. Berkshire	3. Berkshire
4. Poland China	4. Tamworth	4. Duroc Jersey
5. Chester White	5. Poland China	5. Chester White
6. Berkshire	6. Chester White	6. Tamworth

The only deduction which the reader can make from the eight experiments, reported above, is that there is no one breed superior to any other breed in economy of production. Individuality counts for more than breed. The bacon breeds, if of proper constitution, are just as easy feeders as the lard breeds.

In view of the above facts, the best recommendation which we can make to anyone is to select that breed you like best and preferably that which is already most numerous in your locality, and choose a strain suited for the production of bacon. Fortunately, we have fewer breeds of hogs in Nova Scotia than of any other class of stock and it is to be hoped that future development will be along the line of improvement of these breeds we already have rather than the introduction of new breeds. The former procedure will ensure a uniform product for the market and will lead to the highest prices. The latter procedure will unfortunately lead to that condition of affairs which makes it impossible for the butcher and packer to secure a uniform class of pork and bacon, the result of which will be that he himself will receive less money for his product and therefore will pay the farmer less money for his hogs.

HOG BREEDING IN THE MARITIME PROVINCES FROM THE PACKER'S STANDPOINT.

Being a letter addressed by Davis and Fraser, Pork Packers, of Halifax, N. S., to the Secretary for Agriculture of the Province of Nova Scotia.

In reply to your favor of August 12th intimating that you would appreciate our views of the Pork Packing business from the Packer's standpoint, we thank you for the opportunity, not because we would attempt to instruct the producer as to what he should or should not do, but rather that we can point out the situation as it exists at present, both as to the demand for Pork Products in the Maritime Provinces and also as to the supply of hogs available at the present time to supply this demand, with the hope that it will arouse some interest that will result to the mutual advantage of both producer and packer.

We would first deal with the discouraging feature of the situation, namely the quantity of hogs available at present. As you are doubtless aware we are the only Firm in Nova Scotia who pretend to do a strictly wholesale Packing business, consequently the hogs raised here, other than what is required for home use and the retail fresh meat trade, must very largely, if not altogether, find their way to us. Notwithstanding this, we regret to have to say that we can only secure a very small percentage of our requirements in Nova Scotia and we feel quite positive that for every hog we handle for packing purposes here the retail fresh meat dealers have to import (principally from Prince Edward Island) an equal quantity to supply their retail trade, or to put it in other words there are not more hogs raised for the market than is required for the retail fresh-meat trade.

We buy hogs from September 1st to June. At no time can we secure all that we could handle and for the greater part of the time only a small portion of what we use, and the fact that most of the hogs marketed in Nova Scotia are sold during the early Fall and late Spring months when the price is generally at its best should contribute towards a larger supply, but so far as we can see, the supply is not increasing, that is, for packing purposes. Doubtless, the consumption of fresh Pork Products has increased considerably the last few years and this naturally creates a demand in the villages and towns for more hogs than formerly.

As to the demand for Pork Products in the Maritime Provinces, from the volume of our own business and estimating that done by the Ontario Packers in Nova Scotia and New

Brunswick, we are well within the mark when we state that there is a market here for at least two million dollars worth of hog products, namely Pork, Hams, Bacon, Lard, etc. or putting it in other words there is a demand for the product of at least 125,000 hogs annually in addition to those raised and killed for home use and the fresh meat trade, and of this quantity not over 5 per cent. is supplied here.

The above is sufficient, we think, to show conclusively that a good demand exists for Pork Products but it may not be so generally known that the local supply is so limited, and the great question to our minds is what can be done to increase the supply?

We are pleased to say that the quality of the Pork raised in the Province is good. They are mostly hogs from 120 to 180 pounds, which produces the product that is required, medium Hams and Bacon, and the fact of the hogs being young they furnish a class of meat of the very highest quality when it is well cured such as we believe we have the reputation of doing.

In conclusion, it is not alone in hog products that we are away short of our requirements. We have been very short of Beef cattle (but from observation we believe the supply of cattle has increased materially within the last two years) also Butter, Eggs, Cheese, Poultry and in fact all farm products are supplied to a very great extent, possibly 75 per cent. of the city and town requirements from points outside the Province. Why should this be? The home market is the best and most advantageous to the producer and with such a large and growing home market, why can we not produce to supply it? This is a question for the agriculturist to answer, not for the business man, but we believe it is a question that not only the agriculturist and business man should interest themselves in, but one that should receive the very careful if not the first consideration at the hands of our Governments, both Local and Federal.

Yours truly,

DAVIS & FRASER.

LESSONS FROM DENMARK FOR NOVA SCOTIA SWINE RAISERS

By J. B. Spencer, Secretary and Editor of the Canadian Swine Commission.

The little country of Denmark in the practices of her people has lessons for the farmers of any country. Finding herself some thirty-five years ago approaching a state of retrogression, which was marked by a decided movement of the rural population towards the towns and cities and to other countries, the state set herself the task of reconstructing rural conditions whereby the people were encouraged and helped to acquire ownership of the land. Heretofore, the farmers were largely tenants but by degrees they have become owners of properties varying in size from a few acres to three hundred or four hundred acres with few exceeding 500 acres in extent. The land, naturally poor, was depleted from the sale of crops affording a fine scope for earnest effort. The people though poor were possessed of great energy and frugal habits of life so that they had only to be encouraged to enter upon the better system being mapped out for them.

The general tendency characteristic of agriculture in the European states during this period, to abandon the cultivation of grain in favour of higher priced agricultural produce, such as meat, butter, eggs, etc., has been specially observable in Dnemark. Whilst about 1880 Denmark still had a considerable export of grain, since 1882 the importation has been greatly in excess. At the same time the export of the higher priced agricultural produce increased for butter, bacon, meat, eggs, etc., from $8,400,000 to about ten times that amount in 1910. Thus, little by little, Danish agriculture has assumed a purely industrial and commercial character.

While agricultural conditions in Nova Scotia and other Maritime Provinces have materially improved during recent years it cannot be denied that there exists a great gulf between the present state and that which might be accomplished by the application of the principles and forces that have worked such a revolution in Denmark. It must, however, not be forgotten that Denmark unlike Nova Scotia has no mines, lumbering nor fruit growing. She has however a great agricultural area peculiarly adapted to dairying and to the production of pork. More than this she has a problem of population movement similar to that which drove Denmark to grapple earnestly with the question of improving agricultural conditions. In the ten years ending in June 1911, Nova Scotia lost nearly

9,000 of a rural population while her urban people increased by considerably more that four times that number. Then there is the other startling state of her meat supply. Whereas Denmark exports annually more than $22,000,000 worth of hog products, besides a large quantity of beef, Nova Scotia has even to import a comparatively large amount of these products to feed her small population. Besides the large supplies of pork which come in from the United States, the exact amount of which cannot be readily ascertained, there is a heavy movement into the province of bacon and pork from other parts of Canada. In the month of July 1912, there were shipped in from Ontario and Montreal 80 tons of pork and bacon, 42 tons of beef and 322 tons of other meat products. To this might be added an estimated import of 100 tons of hog meats from the United States. At this rate the farmers of Nova Scotia fall short of supplying the local demand for meats to the extent of more than 6,500 tons per year. It would require a deal of Danish organization and thrift on the part of the farmers of the province to reach the point of exporting animal products. Until this is accomplished in a big way, agricultural prosperity cannot be considered to have arrived.

The following table affords at a glance some idea of the conditions that prevail in the two countries which are in many ways easily comparable:—

Some Comparative Figures.

	Nova Scotia	Denmark
Agricultural Area (acres)	1,835,000	3,250,000
Rural Population	306,200	1,500,000
Cows per 100 acres	8	32
Swine per 100 acres	4	50
Feed Grain, excluding oats, per 100 acres (acres)	.5	11
Feed Grain, excluding oats, per acre of of crop (bush.)	33	44
Roots including potatoes per 100 acres (acres)	2	21
Roots including potatoes per acre of of crop (bush.)	353	1,400

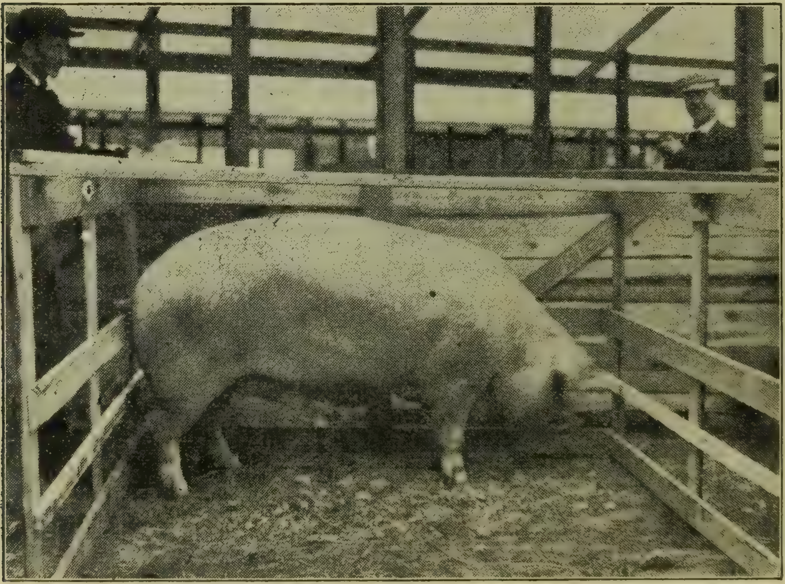
An examination of this table reveals some striking contrasts which point directly towards the great difference existing between the two countries in the methods of farming. In the one case we have intensive dairying and hog raising and in the other ,these industries carried on in a most indifferent fashion. A country that keeps for buttermaking more than 30 cows per 100 acres has a large amount of skim milk and, to consume this profitably, she is wise in providing a proportionate number of hogs. This is the condition of affairs in Denmark and we see the result not only in the direct return from the sale of butter and bacon but the very important indirect one of better crops. A difference per acre of 11 bushels of grain and a thousand bushels of roots represents a tremendous profit when applied to the field production of a province or a country. Nor can it be said that naturally Denmark has better soil than Nova Scotia for much of Denmark is decidedly sandy or gravelly. It has however been greatly built up as a result of her live stock industry.

Thanks to the good influence of the Maritime Winter Fair and other educational factors, there is little fault to find with the quality of the hogs raised in Nova Scotia. The great weakness is the lack of supply. According to the packing firm of Davis & Fraser there are barely enough hogs raised in the province to supply the retail fresh meat trade. This firm estimates that in the Maritime Provinces there is a market for $2,000,000 worth of hog products, equal to the product of 125,000 hogs annually in addition to those raised and killed for home use and the fresh meat trade. Of this quantity it is estimated that not more than 5 per cent. is supplied at home.

It would seem therefore that, in spite of the excellent home demand, no effort is being made to make hog raising a prominent branch of farming but on the other hand only sufficient hogs are raised to consume the waste products of the kitchen and the dairy. It is true the Danes have "oceans" of skim milk but they have much more than this. The large acreage and crops of roots grown in Denmark play an important part in hog-raising. What is to hinder Nova Scotia farmers to provide this cheap and excellent feed in abundance? But the Danes do not depend upon milk and roots alone for their hogs; nor do they guage their hog raising to their grain raised at home. To feed their pigs and cows they import thousands of tons of feed grain annually and find it profitable to do so. In 1909 Denmark's bill for imported feed grains amounted to $10,880-000 but they did it in a business like way. In this as in pratically all their transactions, they have applied the principle of co-operation. An association for the purpose of supplying feed grain has more than 30,000 members representing a large number of branch societies scattered over the country. Through this organization they are able to buy a ship load at a single purchase in the cheapest market of the world. In the agricultural Societies the farmers of Nova Scotia have the foundation of what could be made an exceedingly effective feed buying institution. There are times of the year when damaged wheat can be bought for very low prices on the spot in the West and what makes better feed than this product mixed with home grown barley and American corn?

Improving the Breed.

It is just possible that much of the excellence of Nova Scotia hogs is due to the small numbers in which they are kept. If the production were greatly increased the average might not measure up to the present standard. For the British market the Danes found their hogs lacking in certain particulars and to bring about a general improvement they established Breeding Centres. A Breeding Centre is nothing more or less than a pure-bred herd having the approval and assistance of the Government. To receive the patronage and support of the Government, the farm, the buildings, and the hogs must meet the approval of a Commission consisting of an appointee of the local Agricultural Society, an appointee of the local Co-operative Bacon Curing Society and a district Government Commissioner. After a Centre is approved, it is visited from time to time, to see that it is being properly conducted and the pigs are kept up to the standard. These Centres which are privately owned, receive small government grants in consideration of which they sell the produce of their herds for comparatively low prices, thus enabling every swine breeder to secure superior stock to improve his herd. The stock of the Breeding Centres is highly appreciated and very generally used throughout the length and breadth of the land.



A Model Danish (Landrau) Boar.
Note the type which has made Danish bacon famous.

Experimental Feeding Stations.

It is not enough, however, that the Breeding Centre herds be pure-bred and good breeders; they must produce pork economically and turn out carcasses fit for the best English trade. Consequently there are established Experimental Feeding Stations. At these stations, conducted by the Government under the direction of the Swine Commissioner, the produce of Breeding Centre Sows are fed under test from weaning to finishing. The carcasses are then judged by experts from the standpoint of the British market. To select the pigs to be tested the Commission visits a Breeding Centre and from the records kept, they learn which of the sows are the best breeders. They then select four average pigs from a litter, purchase them, and have them fed at one of the Experimental Feeding stations according to a system that has been found to yield the best possible results. The feed is carefully blended, weighed and fed by a master feeder and the pigs are weighed from week to week. By the time they are ready for the packing house, it will be ascertained whether or not they have put on their weight economically. They are then slaughtered and judged in the same way that dressed carcasses are judged at the Maritime Winter Fair. Points are given for length and evenness of back and sides, thickness of fat and lean, smoothness of shoulder, thickness of belly, form of ham and firmness of meat. The pigs of a sow are fed and judged as an individual group. The record of each group during its career at the feeding station, together with the reports of the carcass judges, are traced back to the respective dam and sire, which are judged accordingly. That is to say, the parents are valued for further breeding by the performance of their offspring in the feeding pen and on the hooks. If the pigs fail to give a good account of themselves, the dam or sire, or both are condemend as breeders. When it is considered that the Breeding Centres produce the seed stock of the country, one can readily see how far-reaching these institutions must be in bringing about a uniformly high standard of pigs over the whole of Denmark.

Nova Scotia has already a fairly large number of breeders of pure bred hogs. Because of the comparatively small number of hogs raised it is just possible that these breeders find little demand for their pedigreed animals. If pork production were to materially increase it is but natural that the sale of breeding stock would correspondingly grow. To bring about this desirable result, to the benefit of the whole people, the swine breeders should follow the example of the sheep men and organize a Swine Breeders' Association. There is plenty of work for such an organization and no time should be lost in getting one formed and put into working order.

Canadian hog raisers are already more or less familiar with the story of Co-operative packing Societies in Denmark. It is perhaps enough to say that the great bulk of Danish bacon is cured in packing houses owned and operated by the farmers themselves. In that small country, there were, a couple of years ago, 36 of these establishments located so close together that many of them received fully 90 per cent. of their hogs by wagon.

These packing houses have been a pronounced success from the first, due to two principle causes. In the first place, sufficient capital is easily secured from the banks at a low rate of interest, and in the second, each shareholder pledges his entire output of marketable hogs to the Co-operative Association. The banks accept the joint guarantee of the shareholders for the erection and equipment of the factory and for working capital. The working fund, which is small in the beginning is increased by holding back a small part of the value of the hogs slaughtered. When this has reached an amount sufficient to carry on the work comfortably, the capital sum provided by the bank is reduced year by year. As a rule, the principal is paid off at a rate to clear the whole debt in 20 to 30 years and by this time a new factory is generally necessary.

As the bacon is cured, it is immediately shipped to the British market. The larger factories build up reputations for their products which are shipped under certain brands to regular customrs f. o. b. at the buyer's risk. Smaller associations, not having received recognition have often to sell their more or less irregular shipments in the open market. All Danish bacon bears the Government brand which is understood to represent a product equal to the best that reaches the British consumer. On account of the uniform excellence of their bacon the Danes find no difficulty in selling all they produce. The British consumer demands Danish bacon and the dealer must supply it. Some of the larger Societies sell direct to the retail trade and others to the wholesale trade; others again sell through agents and Commission firms.

Feeding.

Nova Scotia hog raisers have the reputation of feeding their pigs well but if hog raising were greatly extended it would not be so easy to give the same care as at present to the individual needs of the swine and this would very seriously interfere with the profits secured.

The Danes, like the most successful swine raisers in this country, have learned the wisdom of allowing the litters to remain on the sows as long as possible. In order to raise two litters per year weaning may be delayed until the pigs are fully eight weeks old and this we found in Denmark to be the usual time of separation. The young pigs are in this way carried safely over a critical period with no harm to the mother.

The Commission was surprised to learn that a very large number of their hogs reach the killing stage before they are six months old. This, all will agree, indicates skillful feeding. From the time the pigs are farrowed, it is the effort of the Danish feeder to secure continuous gains so that each day's food shall be returned to the proprietor in the form of pork. This has led him to study very closely the subject as it relates to foods and pigs at all stages of growth. In Denmark, the farmers have implicit confidence in the work of the Experiment Stations with the result that what the stations recommend the farmers follow, so that, go where one will in Denmark, he will find practically the same system of feeding carried on.

It has been figured out there as here that the food of the pig should be changed as it grows in order to get the best results. To this end pigs are in a general way divided into four classes—up to 40 lbs., from 40 to 60 lbs., from 60 to 120 lbs. and from 120 lbs. to a finished weight. In the first stage, milk is largely fed, in the second and third stages green foods constitute a considerable factor, while in the final stage the ration is a more concentrated one. For each stage exact proportions are worked out. For green food mangels are largely used in winter and spring, while lucern, clover, vetches, etc., are all used during the summer and fall. All kinds and mixtures of grain are used and are chosen to the market.

In Canada, we find no uniform system of feeding. There is a similarity in the rations used for pigs in the same way that the average farm horse lives on hay and oats. By following the results of actual tests in feeding with hogs of all ages and with many varieties and combinations of foods frequently repeated on a large scale we substitute knowledge for opinions. Since none of us have time or facilities to prove conclusively the comparative value of certain systems of feeding, we, on the land, seldom get farther than opinions which may or may not be correct. Here, as in Denmark, we have Experiment Stations which may be safely be followed quite closely by the swine raisers of Nova Scotia. At these stations the feeding and housing of pigs have received careful attention.

The food supply of the Nova Scotia swine raiser is the same as that used by the Danes with the single exception of milk of which the Danes have an abundance and Nova Scotians have, as yet, comparatively little to spare for hog feeding. It is quite true that expecially for young pigs milk is of great advantage but, millions of pounds of pork are made at a profit each year without milk. It is a remarkable fact that the counties in Ontario that raise the most hogs per hundred acres of land do very little dairying.

At the Experimental Farm at Ottawa, and no doubt the same is true at Nappan, a system of feeding has been worked out, without the use of milk, that insures continuous and profitable gains. For litters just weaned, care has to be taken to maintain thrift and this is accomplished by the use of finely-ground mixtures given frequently in slop being careful not to over feed. The grain used may be half damaged, wheat the other half being made up of oats, barley and a little ground flax or oil meal. Fine grinding is necessary and the oat hulls should be sifted out. It is great importance to maintain the utmost uniformity in the character of the food and the feeding. This applies not only to the mixtures used, but also to the condition and consistency of the slop given. The food is better to be soaked and, in cold weather, fed warm. Cooking is of no advantage unless in the case of roots or potatoes that are to be fed with the slop. For very young pigs, the juice or pulp of boiled roots or pumpkins, used for soaking the chop has an excellent effect upon the animals. Young pigs should not, however, be filled up on boiled roots alone and expected to do well.

It has been found at the Experimental Farms in Canada as well as in Denmark, that the food should be the same from meal to meal, and from day to day. If fed sweet one day, it must not be allowed to sour another day, or if sour feed is used at all, it must be continued from day to day. A slop that will run freely in the trough is best for young pigs. Until a pig is three months old, it pays to feed it four times a day only as much as is eaten up clean. It is better to miss a meal or feed a less quantity once in a while, than to give too much. The pigs should come to the trough with an appetite for every meal. This is as true in regard to older pigs as to weanlings.

As the pigs grow older, more and more roots or other green food may and should be fed. Cooking has been found of no particular advantage except for potatoes. This is as firmly believed at the Experimental Farms here as in Denmark. For growing or fattening pigs, the quantity of green food fed should not much, if any, exceed the weight of grain. Mangels are largely used in Denmark. These are pulped and mixed with the chop a few hours, or a day, before feeding. As the finishing time approaches, the roots may be reduced in favor of chop, but should not be discontinued altogether. The green foods are valuable not so much for the food they contain as for their salutary influence on the digestive system of the animals. In Denmark we found feeders using the ordinary straw cutter for preparing such crops as lucerne, vetches, red clover, etc., to be mixed with slop. At the Central Experimental Farm, these crops are fed whole in the green state during the growing period, and as hay to breeding stock during the winter. Whether pigs are kept in a grove, a pen, or a pasture, they require some care, but this should not prevent the average Nova Scotia farmer keeping one or more brood sows.

It is true that pig raising cannot be successfully carried on without some slight inconvenience. The providing of shelter, the growing of a small acreage of roots and other suitable fodder crops and the daily feeding and care of a small herd on each farm would seem to be a small matter compared with the direct profits that may be secured from the sale of high priced pork produced by an intelligent system of feeding together with the building up of the land which would go far towards making farming a more attractive vocation.

What is needed more than anything else to develop the industry of hog raising in the Maritime provinces is a proper appreciation of the hog as a money maker. Then and not till then will hog raising occupy the place it deserves in the farming operations of the delightful provinces down by the sea.

HERD MANAGEMENT.

By L. Stevenson, Prof. of Agriculture, Nova Scotia Agricultural College.

The scope of this subject is very wide. I shall deal with a few points briefly.

If the management of the herd is to be successful the individuals that comprise the herd must possess certain desirable characteristics, favorable conditions must exist or be created, advantage taken of every natural condition if favorable and a guiding hand direct those conditions which do not naturally lend themselves to the betterment of the herd.

One great factor in the propagation of species is the maternal qualities of the mother. In swine husbandry, very little attention has been paid to the milking qualities of the sow. Too many have taken it for granted that, as long as the young made fair headway, everything would do, but to a few observant breeders great differences have appeared in the ability of the sows to nourish their young. That there is a vast difference in the milking capacity of sows is easily seen by observing the thrift of various litters. By observing the type of those sows that raise the best litters one will probably conclude that the conformation of the heavy milking sow bears some resemblance to the conformation of the dairy cow in that the neck will be light, shoulder tops comparatively narrow and quarters long. If we would take the trouble to observe the litters of those sows which have short heavy necks, heavy wide topped shoulders we would probably come to this conclusion; such type does not go with heavy milking qualities or motherly instinct. So it behooves us to make careful selections when carrying out any plan for the increase of breeding stock—selecting only from those sows that have proven themselves exceptionally good mothers.

Under normal conditions domesticated swine may be bred during any month of the year; so the question of time in reproduction is easily under the control of the man in charge. A sow receiving proper care and feed can produce two litters a year without detrimental effect on her system. If it is determined that a sow shall raise two litters per year the question of disposition of the young will be a factor in determining when they shall be born. If for exhibition purposes, their arrival should be timed so as to give them advantage of every days growth possible. If for the "roaster" trade their arrival should be timed that they may be ready for the holiday trade at Christmas or Easter. If for the general market litters born during months of April and October are the most satisfactory, everything considered.

The question of condition of the parent animals at the time of mating is of great importance. After suckling a litter a sow is usually very much run down, often much more than need be. It is generally considered among breeders that if the sow is making rapid gains at the time of mating the prospect of a large vigorous litter is much better on the average than with any other condition. If the sow is very fat or very thin one knows not what to expect. We may get a satisfactory litter but we are not at all likely to.

During pregnancy, the sow should be liberally fed and brought up to high condition on those feeds which go to make bone and muscle in preference to fat forming feeds. She should have protection, quietness and abundant exercise. Her babies will then be born strong and vigorous.

A week before the date of prospective farrowing the sows feed should be reduced in order to avoid dangers which may arise through the secretion of a large quantity of milk before the young are ready for it. The feed should continue light and laxative for several days after the young are born and then increased to the sow's capacity, taking into consideration of course the number of young in the litter; the feed to be of such a nature as to cause an abundant flow of milk as well as to nourish the body of the sow. After the birth of the litter, the sow if unmolested, is not likely to leave her nest for some hours. If in normal condition, no feed should be supplied during the first twelve hours. The first feed given should preferably be a slop of bran, shorts or ground oats, this to be increased from day to day for a week when full feed should be reached.

Many people, unfortunately, do not appreciate the fact that the sow requires extra feed during the period of pregnancy in order that materials may be supplied for the upbuilding of ten or fifteen little pigs. The feeds given the sow during the ten days preceding farrowing should be the same as is intended for the three or four weeks following. This will prevent any disorders in the young likely to occur through change of feed. Ground oats, bran and middlings with green forage or roots always gave me the best results with mother pigs.

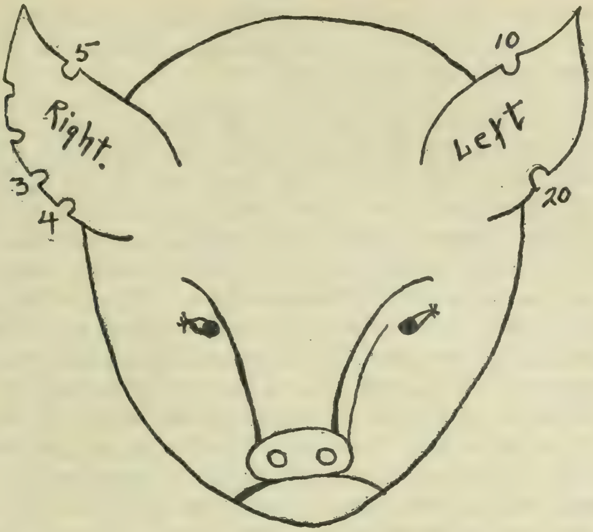
The number of pigs that a sow should raise will vary with circumstances. It has been observed that those teats of a sow's udder that are sucked by her first litter are the heaviest producing sections for any pig of a following litter that may be fortunate enough to start on a teat that had been developed by a previous brother; so it follows that a young sow should rear as many pigs of her first litter as possible in order that every teat may be developed to its greatest producing power. It is often noticed that the pigs of any litter may vary greatly in size after sucking a month. The largest will usually be found sucking the teats nearest the forearm of their mother while the smallest will be found tugging away at a teat or teats that were not developed when the sow nursed her first litter. Ten pigs is quite enough for any sow to nurse. When larger litters are born it is a good policy to reduce the number to ten by destroying the smallest or giving them to another sow whose litter may be smaller. If a transfer is made it should be done quietly and at night.

The management of the herd boar is a topic worthy of consideration. Breeders usually advocate the practice of keeping the boar to himself out of sight and hearing of other pigs. The boar's quarters should be a clean, dry, well lighted and ventilated pen with a yard and pasture area adjoining. The pen should be at least twelve feet square and the yard adjoining should contain one half acre. As for feed, the boar should receive in addition to pasture green forage as rape, green corn or roots with sufficient grain to keep him in condition. Bran, middlings, corn, barley, and a little oil meal will be found to be most effective in grains or grain mixtures in keeping up the vigor of the boar, tankage or meat meal can also be fed to advantage, especially so if the nitrogenous side of the ration is low. One service only should be permitted. If the boar is lazy and does not take sufficient exercise, get after him with a whip.

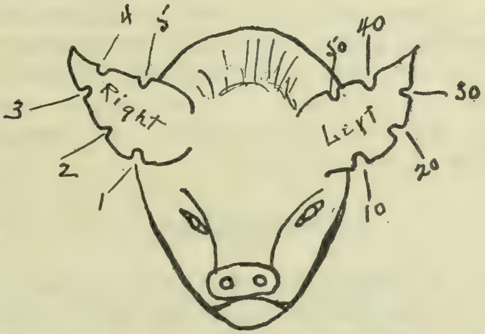
The questions of handling the young pigs has been dealt with in another article, "Starting a Weaned Pig," so needs no repetition here.

Marking.

Marking for identification is a very important matter and an absolute necessity where pure bred swine are kept if such are to be retained or sold as breeding stock. Where white or red breeds are kept the tatto mark is very serviceable. Ear tags are not altogether satisfactory now that many fields and yards are enclosed with woven wire fence. There is great danger of the tags catching the upright wires and pulling out if the pig persists in reaching through the fence. Any system devised for the keeping of records which is based on the nicking on the rim of the ear is likely to be satisfactory if carefully carried out. When the herd is limited to ten or less brood sows the following simple system may be useful. Starting with the lower rim of the right ear, there is room for four nicks, we can call these 1, 2, 3 and 4. On the upper rim we can make another nick and call it 5. This will give us all numbers up to 10 We can make a nick in the upper rim of the left ear and call it 10. On the lower rim we can make four nicks, calling each 20. If we undertake to mark a pig, suppose we desire to call it 25, we would make one nick on the lower rim of the left ear and one nick on the upper rim of the right ear. If we wanted to call a pig number 14, we would make a nick on the upper rim of the left ear and four nicks on the lower rim of the right. This system is easy to remember. The following diagram will complete the explanation.



There is another system where the position of the nick counts for much. The following diagram will explain.



If you want to call a pig No. 8 make two nicks as indicated 3 and 5. If you want to call a pig No. 28 make 3 nicks 3, 5 and 20, and so on combining figures to add up to required number.

The marking should be done when the pigs are two or three weeks old, and the man who is handling the punch should remember that he is handling a very small ear that is apt to grow with the rest of the pig so do not make the nicks too large or mutilate the ear any more than is absolutely necessary. Know exactly what you want to call the pig before pressing the punch as mistakes can't be corrected.

Castration.

Young male pigs not intended for breeding purposes should be castrated when they are five or six weeks old and before they have been weaned. The operation is quite simple, a clean place to work, clean hands, a clean sharp castrating knife, a quantity of carbolic lard or vaseline and a helper is all a handy man requires to do efficient work.

The helper should lay the pig on its left side and hold it firmly while on his knees by grasping hind legs with right hand and fore legs with left hand. the hind legs to be held close to belly of pig that operator may have ample room to grasp the scrotum. The operator will then take hold of the scrotum over the left testicle and gently work the testicle outward until the skin of the scrotum is drawn tight. When this condition has been attained, an incision is made sufiiciently low to provide for drainage from the wound, and long and deep enough to permit easy exit of the testicle which is grasped by the left hand and drawn gently away exposing the cord. The operator will now use the back of the knife blade and scrape the cord in the direction of the body until the point of emergence is reached at the body where the cord should be bruised; the exposed cord can then be severed leaving the bruised end to slip back into the cavity. An application in liberal quantity of carbolic lard or vaseline completes the operation.

Avoid castration operations during hot weather. If it must be done, protect the pig from the heat and flies, reduce the feed for twelve hours preceding operation, keep the surroundings clean. Be sure and make the incision large enough that the testicle can be easily removed and so that the severed cord can easily slip back into position and not be caught and held by the lips of the wound.

Recording.

The keeping of a herd record is of the greatest importance. Even if a farmer has but two sows he should keep a record of their performance and notes on his observations of the litters. This will enable him to place value where value lies and make the best and most intelligent selections. The performance of the herd boar should be recorded, the number, uniformity, vigor, weight at birth and thrift of his prodgeny should be made special note of.

In herds where a record book or card record system and a marking system is practiced, information is always at hand, everything will go in apple pie order and not be confusion as is usually the case where man depends entirely on his memory.

If pure bred stock of high character is kept it is of the utmost importance to keep up the registration, many valuable animals have been lost to breeds through lack of interest on the part of certain owners having permitted records to lapse.

Rooting.

The rooting habit is not harmful to the hog, but rooting destroys the turf or plants that make up the pig's forage. Grass and clover roots and thrown out sod inverted soil becomes uneven and weedy and pastures may be destroyed for the coming season.

If pigs are given an abundance of green feed, ashes, charcoal and grit they are not likely to do much rooting, but if they persist in rooting, rings must be placed in the rim of their snouts in such position that pressure will cause pain. A small ring or loop of wire through the rim of the snout fitting closely will prevent further trouble. If a pig has grown to considerable size before it is desired to ring him, he may be held securely for the operation as follows; make a slip knot in the end of small rope, open loop to considerable size and work rope into the pig's mouth, when well back it may be drawn tightly around the upper jaw, the pig's head can then be elevated and held in any position desired while the rings are being pressed into position.

If a ringing outfit is not at hand, rooting may be prevented by cutting the cartilage at the end of the pig's snout, splitting it well down with a sharp knife. This is hard on the pig but a most effective method of checking a persistent rooter.

Vermin.

The pig has an enemy, the louse, which causes it much annoyance and consequently loss of flesh. Pigs that are kept closely confined usually suffer most. During the summer months when the pigs have range and access to water holes and mud wallows there is no trouble from these little enemies. After pigs are put into winter quarters, if neglected, lice are sure to appear in such numbers as to cause considerable loss.

Since the smothering effect of a mud wallow is the most effective remedy in summer, it follows that any similar contact remedy or application in the winter or spring will have similar beneficial results.

The application of oil or grease by means of a brush is a very effective, though slow way of combating lice. The spray pump is a quick effective and handy way of applying oils to the skin of a pig and perhaps the most satisfactory way of applying kerosene emuslion. The various coal tar preparations extensively used in combating sheep ticks are also very useful in combating hog lice. If but few pigs are kept the application of any refuse grease or oily substance that may be at hand will have a decided checking influence on the vermin.

Prevention of Swine Ailments.

If cleanliness was the watchword of every man who has to do with pigs, disease would be reduced greatly. The swine, usually considered unclean ,has a habit of refusing to sleep in its own filth unless compelled to do so, such can not be said of other species of domestic animals. If part of the pen floor is raised and kept bedded the pig will do its part towards keeping clean.

Now that dairying is developing and creameries are being built, the dairy by-products, skim milk and buttermilk, are more plentiful. These feeds are most desirable and absolutety necessary in successful swine raising, but the pigs may get more than skim milk and buttermilk when fed these feeds, the bacillus of tuberculosis may be present. Pigs are most susceptible to the disease and one must ever be on guard against it. Skim milk and the rooting of manure from infected cows is the most common source of tuberculosis in swine, so protect your swine by knowing that your cattle are healthy and by knowing that all the food consumed by the swine is reasonably clean.

Intestinal parasites of various kinds inhabit the stomach, the intestines, and sometimes the lungs of pigs causing considerable loss in body vigor. If pigs are given an abundance of food and have free access to such materials as charcoal, ashes, air slaked lime and coal cinders they can thwart any worm attack. If through neglect pigs do become infested with worms they can be relieved of the same by dosing each pig with one half ounce fluid extract of spigelia and senna given every four hours until purging starts.

Paralysis of the hind quarters, due to disease known as Rickets, may be prevented by proper feeding. A pig affected with this ailment will have soft spongy weak bones, joints enlarged and mis-shapen. This trouble is due to lack of mineral matter in the food and can be prevented by supplying a generous quantity of lime.

Diarrhoea and Scours, usually the result of faulty feeding or unsanitary surroundings, prevention therefore consists in careful, proper feeding, avoiding all sudden changes, unclean feeds or filthy floor and feeding troughs.

Diseases of the respiratory organs in swine are best prevented by giving them clean, dry, warm, well ventilated quarters. Dusty air, overheating, wet or damp beds about refuse piles or manure heaps all tend to favor the development of respiratory troubles. Sudden changes occasioned by shipment or exposure should be avoided.

Diseases of the nervous organs are best prevented by giving the pigs abundant exercise and avoiding all feeds which tend to irritate the stomach and intestines.

The yards or small areas over which pigs run and graze should be changed often, plowed each season if possible and some forage crop, as rape, peas, oats and vetches sown, such treatment will aid in keeping the soil in sanitary condition. Frequent applications of whitewash and coal tar product disinfectants to the buildings and pens will aid materially in the prevention of disease and will give an impetus to the general thrift of the pig.

THE SUCCESSFUL FEEDING OF SWINE

By L. Stevenson, Professor of Agriculture, N. S. Agricultural College.

The word successful used in the title of this article may cause some of my readers to pause and ask why successful. Is not all swine feeding successful in so far as profits are concerned? Are not pigs the most easily grown of all animals? Is the pig not satisfied with fewer comforts than any other animal? If the above questions were actually asked me, I would answer, all swine feeding is not profitable, pigs are more easily grown than any other farm animal, the pig is satisfied with fewer comforts than any other animal.

The great factor on which success in swine feeding depends is the man, not that I am going to class man with the swine, but the pigs must be fed and cared for in a way befitting any animal to be used for human food. In order to be a successful feeder of swine a man must have a natural liking for animals. A man who is perfectly at home tending his pigs and takes actual pleasure from his work will be able to notice their progress in response to his feeding and care. The successful swine feeder is a man of good judgment, an observer; he will know each pig from the time it comes into his possession until it leaves him; he will observe from week to week the broadening of its back, the lengthening of its side, the filling of its ham, yes and note with pleasure these visible and outward signs of thrift and future profits as good as gold. The feeder should be of equable temperament; as the pig naturally is, shall I say lazy, or that it does not like to be hurried. To such a man profits from swine feeding come in bulk and without effort.

What kind of swine shall we feed? This question is most easily answered by saying, keep pigs of that breed which you like best and, as the ignoble end of all is the packing house or provision market, the breed that we like best will be the one that will make us the most money, be they Yorkshire, Berkshire, Tamworth or Chester. Man must have admiration and fondness for his animals if he is to be successful with them. If he admires the Yorkshire more than other breeds, then the Yorkshire breed is the one for him to keep. If he admires the Berkshire more than the Yorkshire, then the Berkshire is the breed for him to keep as he will naturally take care of those that he likes best.

Whatever breed a man may pin his faith to, the questions of constitution and form will always be uppermost as we must have a frame on which to build our meat and a constitution to make such transformation possible. The most satisfactory pigs to feed, whether for breeding purposes or market, are those that conform most nearly to the type called for by those who are expected to buy the product of our labor as here the cash end of the system is controlled.

The breeder supplies the small farmer of feeder with his stock and the small farmer or feeder supplies the demand of the meat market, perhaps satisfactorily or otherwise, depending largely on the character of the parent stock supplied him by the breeder. The more closely the pigs conform to desired type the greater the profits if sold in a discriminating market, and if we are not selling in a discriminating market now, it is only a matter of a very short time until we will be, as the markets are developing quite as fast as the demands of an enlightened consuming public. So it behooves us to start right or get right on type as soon as possible.

The most desirable types of swine are described in other articles in this Report and will need no mention here, but let me say this, good feeding swine come from good feeding swine. If the old stock are good, the young stock should be good; poor feeding parents never produce good feeding stock.

There is a considerable difference in the most approved methods of feeding swine for the butcher and those intended for breeding purposes. In this article I shall confine my remarks on feeding and general care to the production of swine for the butcher, dealing with the question of feeding the swine for breeding purposes in another article.

The feeding of the little pigs begins at the time of conception. They are fed during the first four months in utero through their mother. So the care bestowed upon the mother pig should be such as to cause a normal and vigorous development of the Fetuses. For the first month after birth they are dependent upon the milk secreted by their mother. So here again the mother's feeding should be liberal and of such a nature as will enable her to secrete abundant milk to nourish her little ones. There is nothing more pitiful to see than a thin emaciated sow worried by a large litter of youngsters that try in vain to secure milk from her udder. The sow cannot supply milk for her young if she is not liberally fed. The man is master of the situation and he should see that the food supply is never failing, and that resonable comfort and protection are afforded the pigs.

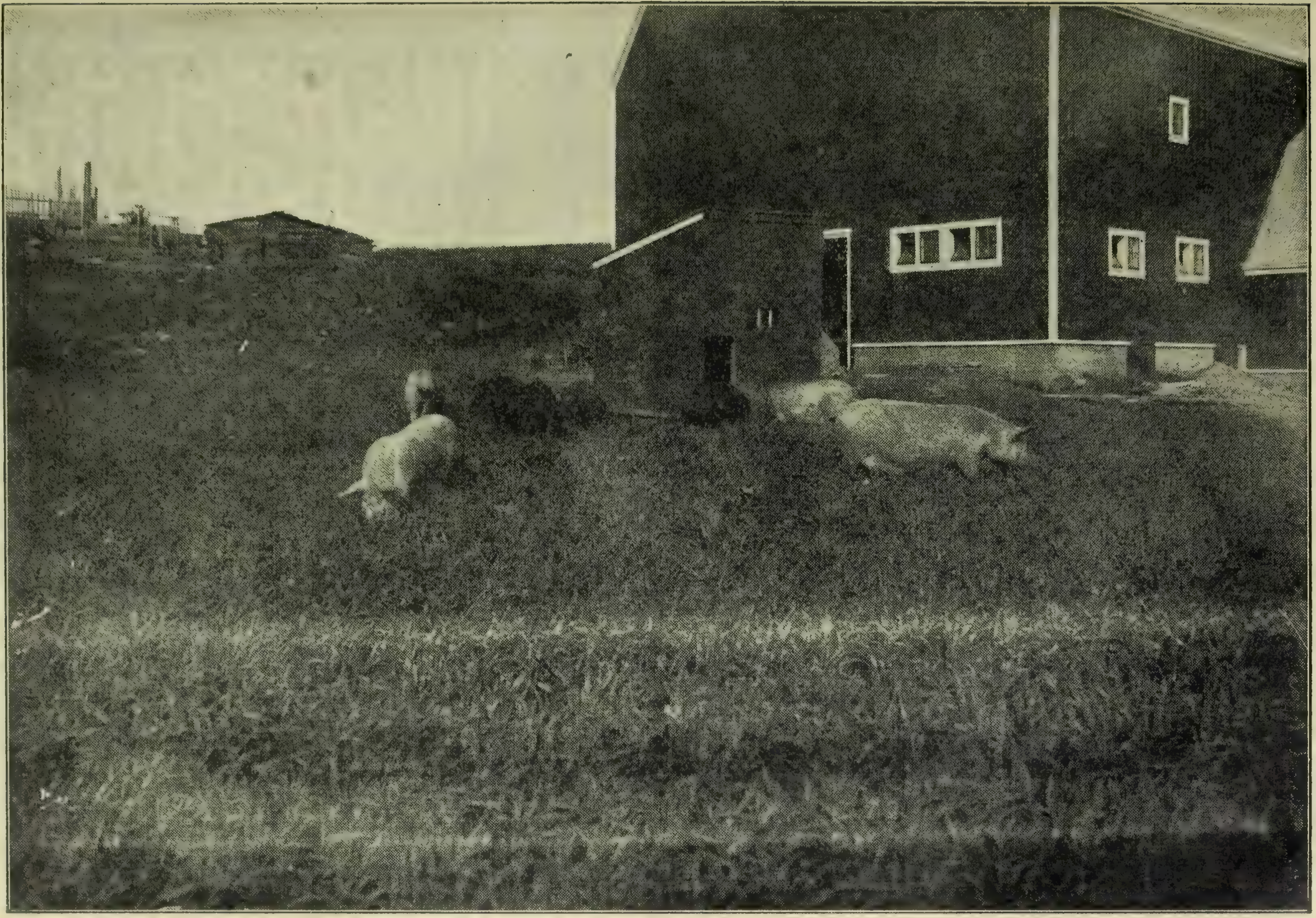
When the little pigs are four weeks old arrangements should be made whereby they can feed at a trough of their own. This is easily done by dividing the feeding pen and placing in one part a small trough and feed supply out of the reach of mother pig. This additional feed, preferably warm milk at first, then milk and a little grain will aid in supplying the demands of their growing bodies and will also remove in part the heavy tax placed on the mother pig. It matters little what kind of a pen the pig family is kept in so long as it is light, warm and dry and opportunity is given whereby the little ones can run out on the soil and receive all the benefits of the sunshine. Little pigs or pigs of any age always thrive best when given an ulimited run where they can live in part as nature intended a pig should live. The little pigs should be weaned at eight weeks old and be given such feeds in abundance as will supply their appetites and prevent their ever getting hungry. This may sound like liberal feeding. That is just what it is, and let me say right here that liberal feeding is the only successful feeding. By liberal feeding I do not mean overfeeding. We raise pigs for the meat they will produce and the sooner we get them up to the desired weight the less they will cost us. The feeder who takes two years to get his pigs up to two hundred pounds weight is losing money fast, and the feeder that gets his pigs up to the same weight at six months of age is making money fast. The reason for this is that for every day of a pig's life a certain amount of feed is used to maintain the heat and energy expended by the body of the pig. This heat and energy comes from the feed consumed and must be supplied first before any fattening or increase in body weight can take place. So it follows that the body of a pig that trots around for two years will use up during its life four times as much feed for maintenance as one that trots around for only six months. It is therefore impossible for a long kept pig to pay a profit, and every day we can shorten the period in making the required weight is a day gained, which means so many less pounds of feed for body maintenance and consequently a large profit on the pig quickly brought up to weight.

Taking it for granted that we now have a litter of well grown pigs just weaned, I shall outline a system or systems of management whereby they may be reared and finished profitably.

The feeds that give the best results are those comparatively high in protein, which is the muscle forming portion of the food. Such feeds are most easily supplied in the form of green alfalfa, clover, or as skim milk or buttermilk supplemented with the common grains. Wheat products as shorts, middlings, bran and finely ground oats in conjunction with skim milk give excellent results. An abundant supply of skim milk with sufficient middlings or finely ground oats stirred in to make a thin slop and this supplemented by a clover pasture is the best combination to develop young pigs—The milk, and middlings or oat mixture to be fed three times each day in such quantity as they will clean up at once without waste. Never leave feed in the trough after the pigs have finished feeding. Aim to give them all they will take at once, three times a day and no more. As the pigs develop and reach the age of four months, other grains may be substituted if they can be supplied more cheaply depending upon local conditions. Barley and rye may be fed profitably if ground and mixed with other feeds. If fed in cold weather they should be given dry and an abunadnce of pure water always at hand for the pigs to drink. Feeds should never be soured if possible to avoid it. Soaking, to soften, for more than twenty-four hours is not good practice. An important point often overlooked is the failure to supply the mineral substances in the food required in the making of bone and muscle. A supply of charcoal, salt and wood ashes should always be available to growing pigs.

Home grown feeds should be used as far as possible in order to have as it were a double profit. A variety of feeds should be grown as a pig relishes a variety and change in its diet as much as a man does. One grain fed continuously as an entire ration will tire the pig's appetite and make gains slow or even expensive. If we supply the pigs with such variety of feeds as will grow a big strong frame, always keeping the appetite keen, they will finish on an entire grain ration very readily and profitably.

If skim milk is not available, a mixture of equal parts of shorts or middlings and corn meal supplemented with tankage or meat meal, in proportion of 8 pounds to 100 pounds of grain will give fair results. If tankage or meat meal is not available, linseed oil meal fed in double the quantity will give practically as good results as the tankage.



Pigs feeding on Green Crops at the College farm, Truro.

The pasture plot should figure in every ration for pigs where at all possible. Provision should be made whereby plots of clover, bluegrass, vetcnes, rape, or similar green feed will always be at hand in season. If feeding in winter, mangels, turnips, clover, or alfalfa should be supplied to the extent that the pigs can profitably make use of them, which is usually as a moderate fraction of the ration.

HOW TO START A WEANED PIG.

By L. Stevenson, Prof. of Agriculture, N. S. Agricultural College.

Wean the pig properly and the start in independent life will be easy. By weaning properly, I mean that the change in nourishment should be gradual, should be liberal, should be of such nature as will be easily handled by the delicate stomach of a young animal.

An appetite for something more than its mother's milk may begin to assert itself when the pig is about three weeks old. The little ones may be noticed rooting a little, nibbleing at grass, or having a lunch along with their mother even before they are three weeks old. However, when the young reach this age it is a good policy to make such arrangements in a pen adjoining that occupied by their mother, where the little ones can feed by themselves and gradually become accustomed to a milk and meal ration, until such time as they are removed from the sow and are started on an independent life.

Up to the time of weaning, the feed and management of all the pigs in the litter will be the same. But after weaning the question of their future; shall they be reared as breeding stock or fattened for market, comes up for attention. Those that are to be retained as breeding animals should be continued on those feeds calculated to promote growth rather than fat, a ration that will develop bone and muscle to the greatest extent. On the other hand, those that are to be fattened for market should be fed more liberally on feeds of a carbonaceous nature.

Those pigs of the weaned litter that we decide shall be reared for breeding stock should, first of all, be given ample range where they may have an abundance of exercise. They should be fed a rather narrow ration. Their feed should be plentiful, but not in excess to cause them to become indolent and refuse to take the exercise so necessary to develop bone and muscle. Exercis will develop strong muscles, firm joints, strong legs. Abundant feed will fill the pig's stomach and nourish the bone, the sinew and the muscle. From such treatment ,we may expect strong, vigorous, thrifty breeding stock, the kind that will produce well and last. As for feeds, sweet skim milk and enough wheat middlings to make a thin slop, with clover and alfalfa in pasture range, will give the best satisfaction, being both cheap and efficient. If skim milk is not available, it is very difficult or practically impossible to get a cheap substitute of equal value. Blood meal, tankage and animal meal give fair results when fed instead of skim milk. With skim milk available, it should be used directly it comes from the separator, warm and sweet, one quart of middlings or finely ground oats (hulls removed) to each gallon of milk. Do not feed young pigs all they will consume. Better keep them just a little hungry. The overfeeding of a young and delicate stomach has its dangers. Gradually increase the feed allowance and proportion of grain as the pig appears able to handle it. If skim milk is not available and the pigs are two months old before weaning, they may be started fairly successfully by feeding blood meal, meat meal, or tankage in limited quantities, in conjunction with wheat middlings or oat meal, provided they have a clover run, a dry bed and shelter, and an abundance of sunshine. I have often observed numerous vigorous litters of pigs reared about slaughter houses without a drop of milk, but they were given free access to the blood and offal, were fed grain and given an ample and varied range. The quantities of blood meal, meat meal or tankage safe to feed young pigs, in case skim milk is not available, varies with the vigor of the individual. Pigs two months old should be started on a quantity as small as one ounce per day per pig, this quantity to be gradually increased, great care being taken not to over-feed, increasing the quantity up to one-tenth of the ration.

If the youngsters are intended for the packing house or local meat market, the question of exercise is not so important and the best gains in weight (the prime object in view) are made where the range is limited to a small clover pasture area or yard. No time should be lost in getting the young pigs started. Every day of a young pig's life should mean so many ounces of gain in weight; yes cheap gain, as gains are cheapest during the first six months of a pig's life. The ration for pigs intended for the butcher should be wider. Skim milk or meat meal play their part in the ration, but to a more limited extent. One pound of grain to a quart of milk, or one pound of grain to 2 ounces of meat meal or tankage will give good results, these quantities to be increased steadily as the pigs demonstrate their ability to handle the increased feed. Clover, rape or pea and vetch pasture are indispensable in starting young pigs. If these crops are not available for pasture, the green feed may be cut and delivered at the feeding yard from day to day during the season. If feeding winter litters, provision must be made whereby the young pigs will receive, as part of their ration, a suitable substitute for green feed. Mangles, Sugar Beets, Turnips, Alfalfa or Clover do very well. The roots should be boiled or finely pulped and not form more than one-tenth of the daily ration. Clover or alfalfa should be fine stemmed, with an abundance of leaves, and may be fed dry or steeped, to the extent that the pig cares to make use of it.

One of the secrets of success in starting young pigs is to feed often and little at a time, as the pig's stomach is small and cannot handle any great bulk of feed. Where the pigs have access to pasture, it offsets the frequent feeding necessary to a certain extent.

In cold weather all feeds given to young pigs should be warm, the nearer blood heat the better. When pigs are given cold and sloppy foods, they are seen to shake and shiver with the cold, they huddle together in their efforts to keep warm, while an expenditure of heat goes from their bodies to warm up the cold feed. Cold, sloppy feeds given to young pigs when the temperature is low may result in disordered lungs, bowels or crippled legs.

Close attention to the few details that go to make up the comforts of a pig's life, coupled with judgement in feeding, will bring satisfactory results every time. All little pig ailments can be traced to some neglect, perhaps unintentional, but neglect all the same. To any man who has not been successful in starting weaned pigs, I will say this: Treat the little pig as you would like to be treated if you were in his place. Use your head as well as your hands and think out the causes of failure.

THE HOUSING OF THE FARM SWINE

By L. Stevenson, Professor of Agriculture, N. S. Agricultural College.

On the average farm of this Province, I believe no special arrangement has been made for the sheltering of the swine. On those farms where only one or two brood sows are kept and their litters reared for the market, we find but little provision made for the comfort of the pigs other than the setting apart of a section of a barn or shed or other outbuilding for their accommodation. Such provision, in some instances, is giving excellent results, and the degree of excellence in results can be measured in each case as they approach an ideal in dryness, ventilation, brightness and cleanliness.

It matters little of what a pig house may be built of, so long as it is strong and gives the desired dryness, ventilation, brightness and cleanliness. We can have these conditions by building with good spruce lumber and cement, both of which are so easily obtained in this province. No need of going to any great expense to get the desired conditions—a lining of gold foil or polished brass is not required—just good sound spruce lumber and cement concrete, and we can have the very best kind of a hog house to suit our individual needs, if we will only plan right, and then build according to our plan.

In those sections of our country where swine raising has reached it's greatest height, the form of hog-raising can be divided into four classes. First on those farms where large hog barns are erected for the accommodation of many swine under the same roof, or where everything pertaining to the swine is kept together. Second, on those farms where the individual housing system is practiced, where each pig is given a house of its own Third, on those farms where a portion of a number of farm buildings has been set apart for the pigs. Fourth, on those farms where above systems are combined.

You may ask which will give the best results. This is easily answered by stating that each system or combination will be successful in operation to the degree in which it supplies sunlight, ventilation, and dry sleeping quarters, feeding accommodation and exercise space.

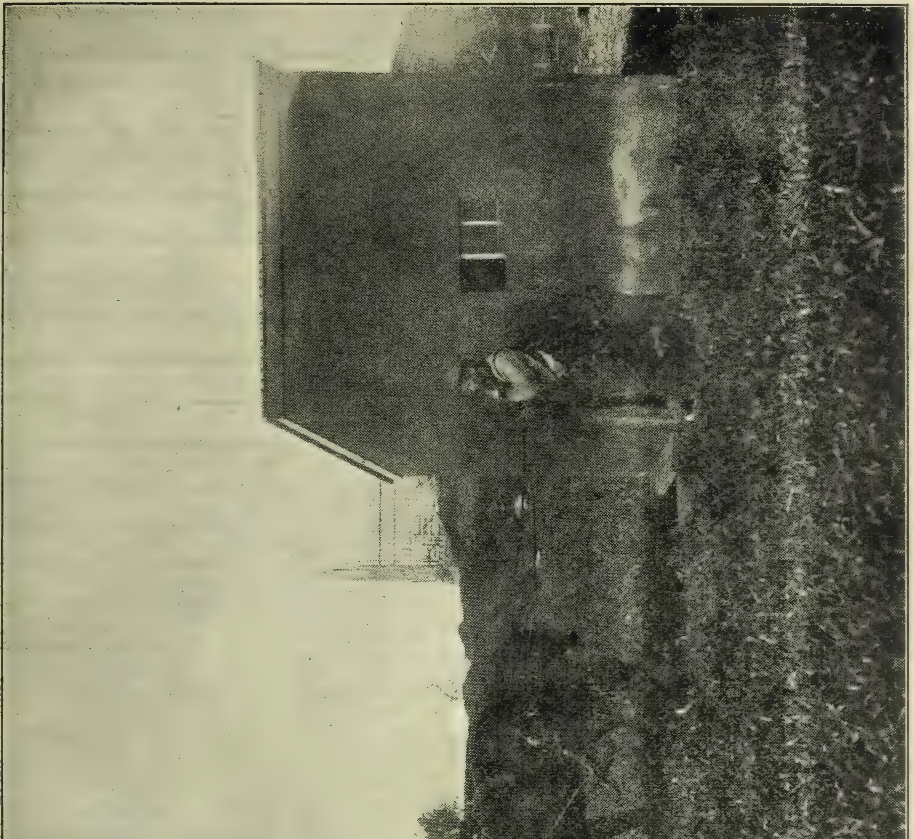
Much can be said in favor of each system of hog housing. The large hog barn where supplies of feed and bedding may be kept and water system provided most easily gives the system a big advantage when considering the labor problem with its necessary feeding and feed preparation, but is apt to fall down again when considering the light, ventilation and dry bedding questions which are essential in the prevention of disease or the spread of contagion. The individual house has advantages over the large house in that the pigs are isolated, quiet and the ground over which they run easily changed by moving of house. This system requires more land and more labor in feeding but has a distinct advantage in that it produces the most vigorous pigs with less skill on the part of the herdsman As conditions on farms vary, so the ideas and ideals of men vary One farmer may desire to keep but one brood sow, while others may desire to keep many. One may desire to produce breeding stock, another may desire to produce pigs suitable for bacon. Others may desire to produce pigs suitable for the lumber camp trade. Whatever the desire, I hope the plans of building submitted herewith will aid the individual farmer or breeder of this Province in his pig housing problems.

Location

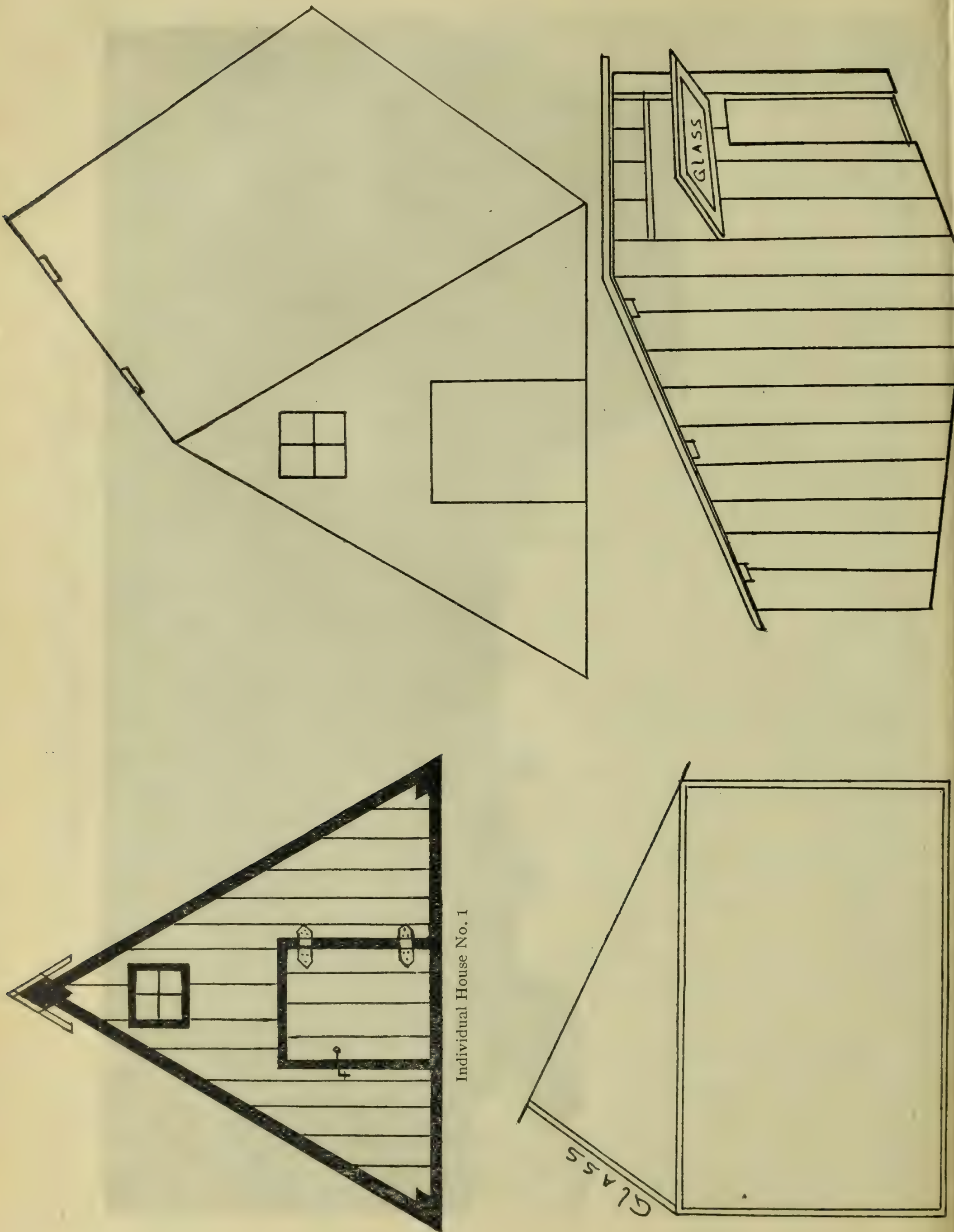
The first consideration in the establishment of a swine pen is dryness. Many make the mistake of building on low ground where the soil is cold and wet and drainage is difficult or impossible. Whatever the site decided upon, a dry location is absolutely necessary. Protection from the north wind is also very desirable. A sunny south slope with a protecting woodland on the north is the most desirable situation, and if such can be had near the other farm buildings, it will be greatly to the advantage of the prospective buider to erect his piggery thereon. Yard room should be considered. Pigs inhabiting pens surrounded by ample pasture areas that are provided with abundant shade and water, approach nearer the natural conditions of life and consequently do much better than those located in pens where little or no yard room is given. If the building can be placed on a light or gravelly soil, so much the better as drainage and dryness are more easily obtained. A limestone soil is very desirable, because the water from soil containing lime will also contain lime, and this taken by the pigs in their drinking water as well as particles of soil and stone will furnish the lime that is so necessary in the building up of the boney framework of the pig. So it naturally follows that pigs reared in buildings and on pastures located on limestone soils, possess stronger bone than pigs reared under other natural conditions on soils of different character. The pasture area should furnish, if possible, a stream of clear water that the pigs may never thirst and may receive all the benfits of a mud wallow in the warm weather. With the individual system of housing, it is easily possible to take advantage of desired locations even if scattered and locate thereon the small shelter and enclose with portable fence. This is especially desirable in the summer when one may have small areas of green feed that pigs could make good use of. A photograph accompanying this article shows a portable house with a herd of brood sows located on a small area of oat, pea and vetch pasture in October.

Various plans of hog houses are presented for those interested which will serve to give ideas of what has proven vauable by way of shelter in swine husbandry.

There are a great many types of individual hog houses but they are easy separable ino two general classes; those with sloping sides and those with perpendicular sides. Individual house No. 1 is the best type of those having sloping sides. It gives a larger floor space, considering lumber requirements, than any other type. It is the easiest to build and is light to move.



A portable hog house being moved at the College Farm, Truro.



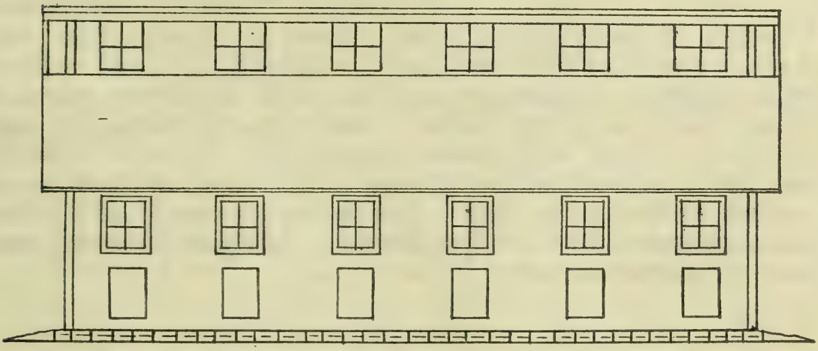
Individual House No. 1

In building an Λ shaped individual house the sides should be double lumber with tar paper between the layers of boards. Ends and doors should be double. The house should be mounted on skids that it may be easily moved. If tongued and grooved flooring is used on sloping sides, there will be little danger of leakage and it will be cheaper than shingles or prepared roofing. Houses of this type can be built at a cost of from $20.00 to $40.00.

Individual houses of this type shown in photo of pigs in soiling crop, or individual house No. 2 are giving excellent satisfaction. They are more expensive to build but have the advantage of more light and air space. Houses of this type should be built with strong frames, preferably of double 2″ by 6″ spruce. If double boarded and a layer of tar paper used between boards, they can be kept fairly comfortable even during periods of low temperature.

Individual houses of the type shown by outline of individaul house No. 3, have a distinct advantage in localities where the hours of bright sunshine are short in that it enables the swine owner to give his pigs all the benefits that go with sunlight. Houses of this type are easily constructed and are but little more expensive than houses of other types. Suitable sash for glass used for one side of the roof is easily made and glass suitable for the purpose is not expensive. The frame for this type of house is very similar to that used in house No. 2.

Swine Barn No. 1.

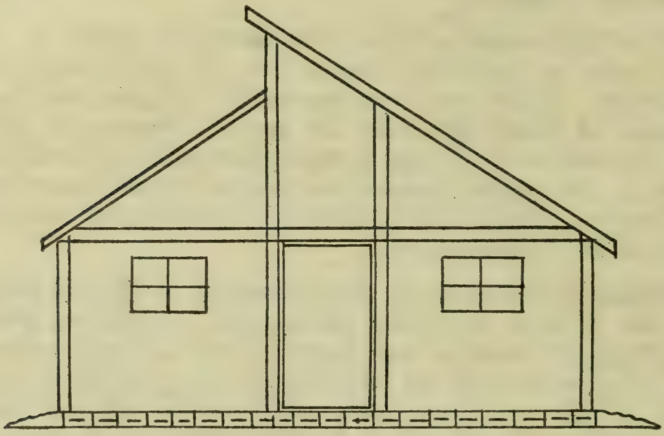


Swine Barn No. 1. Side Elevation, Fig. 1.

This building can be put up at a material cost of less than $200.

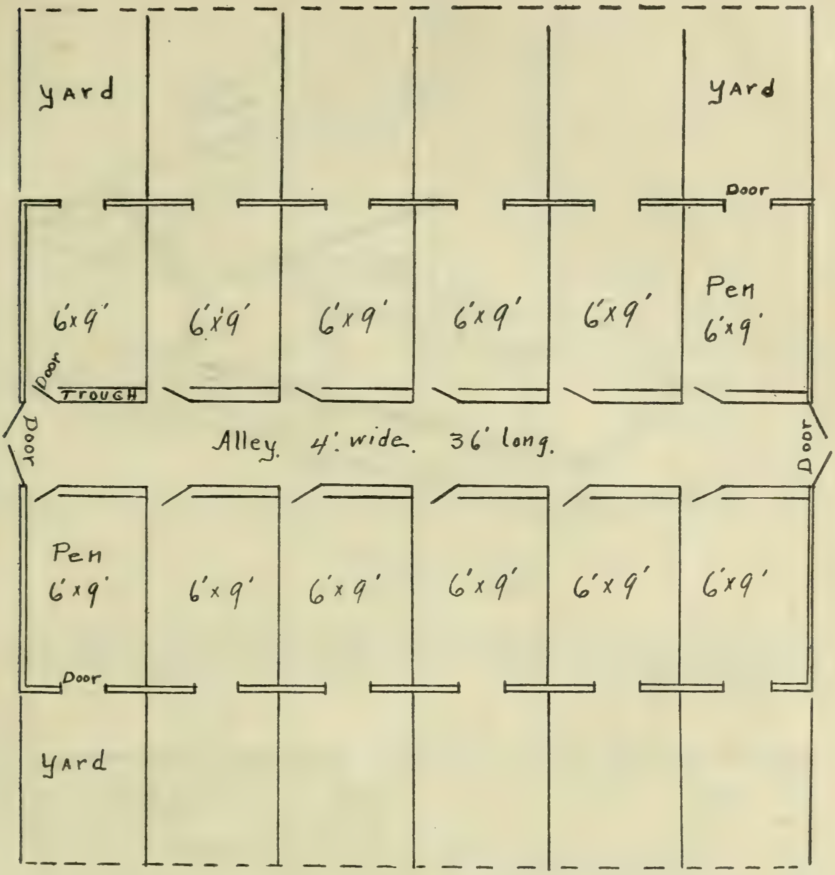
The feature of the windows at the apex of the roof serves to admit the rays of the sun on the north row of pens, the south row of pens being lighted by the lower tier of windows, thus affording a sun bath to all swine that occupy the pens.

The foundation for this building may be blocks of stone or cement or it may be cement pillars.



Swine Barn No. 1. Fig 2, End elevation.

The sills are 6″ x 6″ hemlock. The frame as shown in Plan 1, figure 2, consists of 2″ x 6″ scantling placed 2′ apart and cut 7 feet high. There are two rows of 4″ x 4″ posts one on each side of the alley 6′ apart extending to and supporting the roof. Girts are 2″ x 6″ placed 6′ apart, plate beams 4″ x 6″. Rafters are 2″ x 4″ placed 2′ apart. The roof is made one-third pitch and may be sheeted tight and covered with shingles or prepared roofing. The sides are matched siding, may be rough sound boards placed vertically and battened. Eaves and gables project 13″. 2″ x 8″ answers well for floor joists, placed 2′ apart. 2″ plank, or plank above cement desirable for floor. The windows are 2′ x2′3″, the gable windows made to slide sideways All partitions for pens may be made moveable.



Swine Barn No. 1. Ground Plan, Fig. 3.

Fig. 3 of Plan No. 1 shows ground plan of building, pens, yards and alley.

Figure 2, showing side and end elevation, is a very serviceable building that can be erected at a cost of $400.00. It contains ten pens, each 8′ square, and ample storage space for bedding and feed. An alley way 8′ wide runs from end to end. This building is 24 feet wide and 56 feet long. The ground plan shows a very suitable arrangement of pens and feed room.

Windows in building of this type should be as large and numerous as possible. The upper window sash should be hinged or pivoted that they may be opened or closed by an arrangement similar to a green house window adjuster.

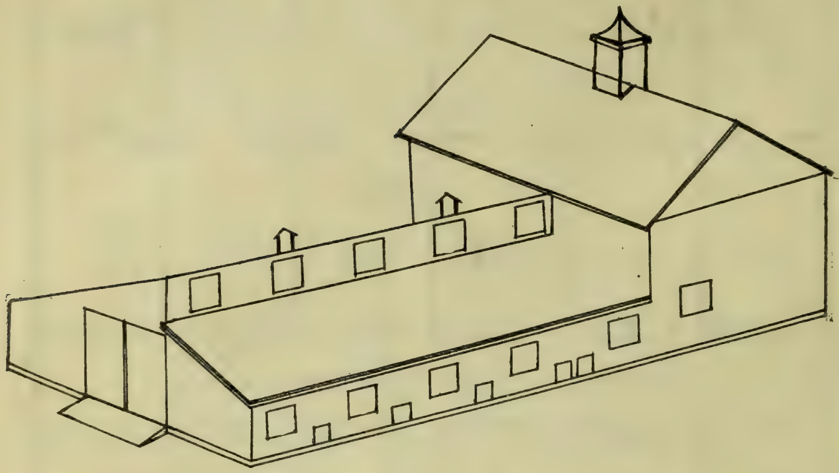
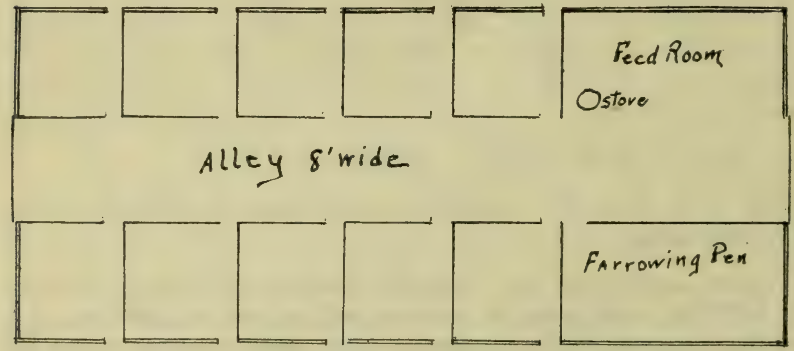


Fig. 2. $400 Piggery.

The ground plan shows a very good arrangement for pens and feed room.



Ground Plan for Fen. Fig. 2.

The frame is light, 4" x 6" or double 2" x 6" being amply strong. The studding for the walls preferable 2" x 4". The outside surface of wall of rough inch lumber and shingles. The inside surface to be rough lumber over tar paper, an air space being left between the studding. Planed or matched lumber can be used at an increased cost.

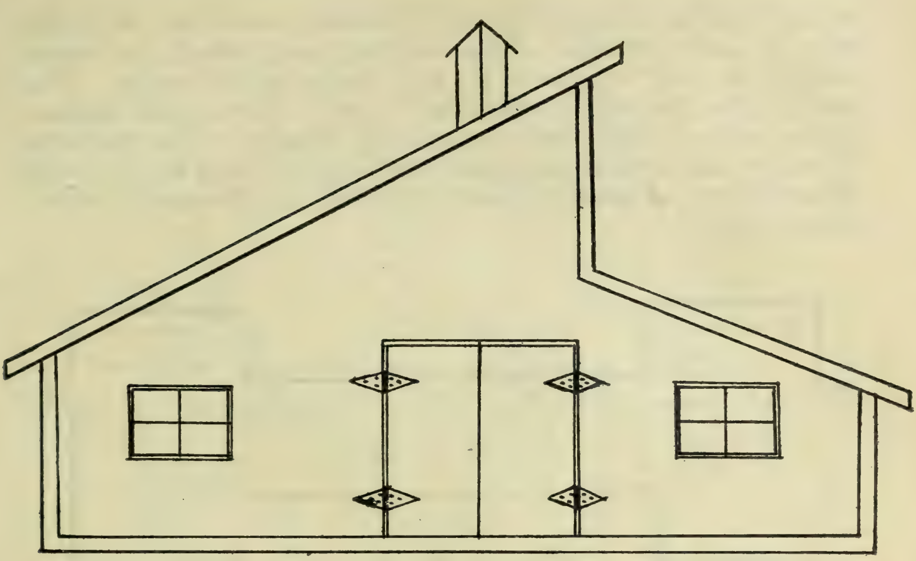


Fig. 3A.

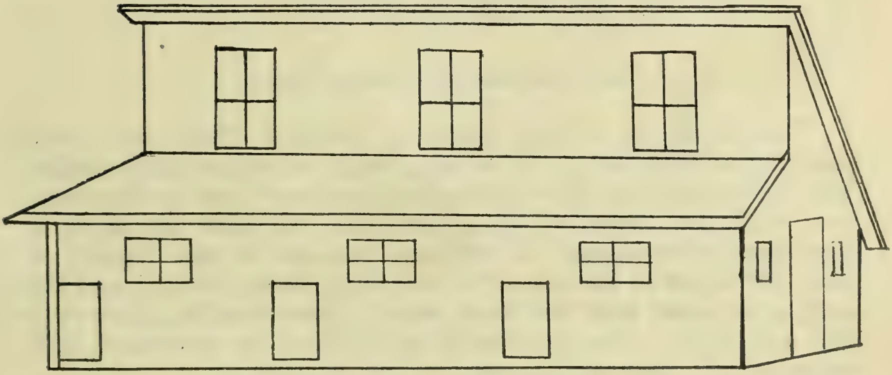
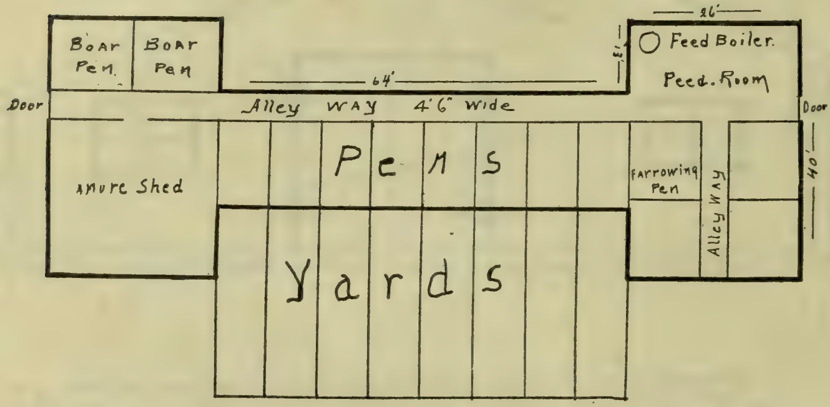


Fig. 3B.

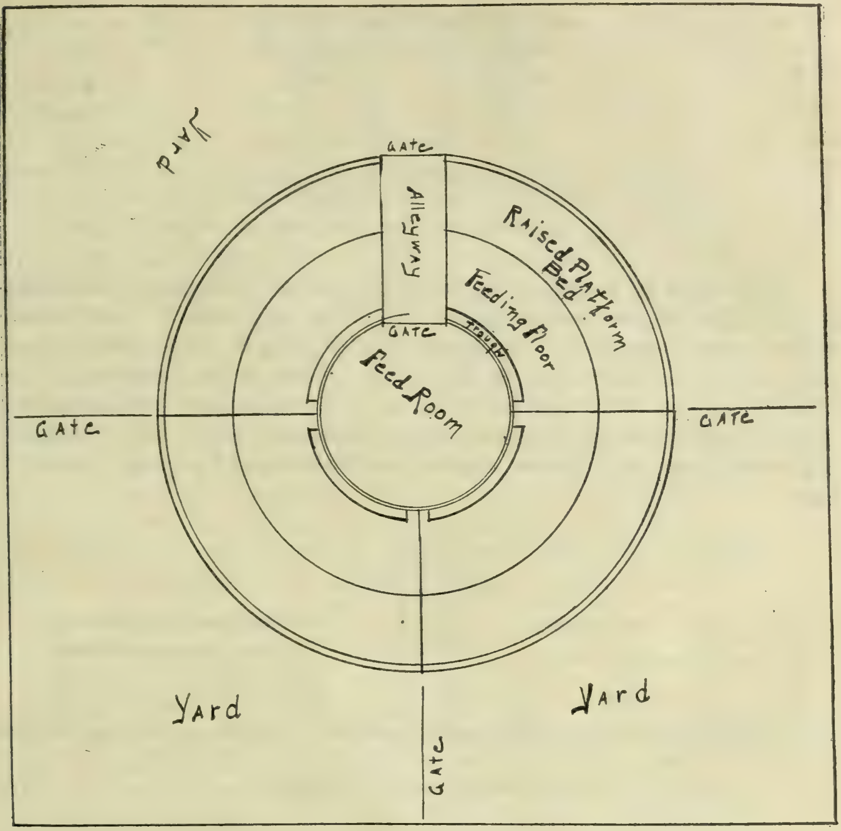
Figure 3. A, showing front or south side elevation Figure 3, B, showing end elevation gives a fair idea of a pen suitable for pigs during finishing period or all stages of existence. The roof arrangement give ample light; the alley way can be made of sufficient width to permit a cart or waggon entering, thus facilitating the removal of soiled litter, the loading or unloading of pigs or feed. Buildings of this type built 24′ square are not costly and, if enough large windows are put in, the pens on the north side will receive ample direct sun light. If more than six pens are required, the building may be extended east or west. Feed and bedding

storage can be arranged by way of making use of pen on north side for such purpose. This building being small the frame is light, 4″ x 6″ or double 2″ x 6″ being amply strong. The studding for the walls preferably 2″ x 4″. The outside surface of the wall of rough inch lumber and shingles. The inside to be rough lumber over tar paper, an air space being left between the studding. Planed or matched lumber can be used at an increased cost.

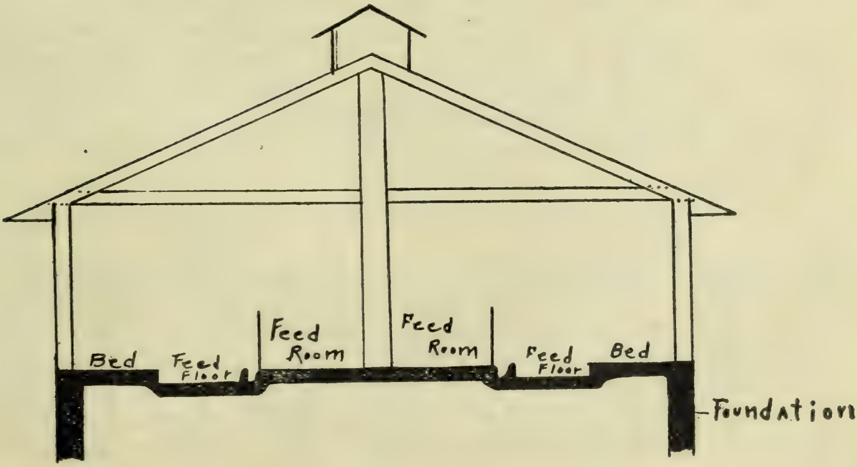


Ground Plan of N. S. A. College Piggery.

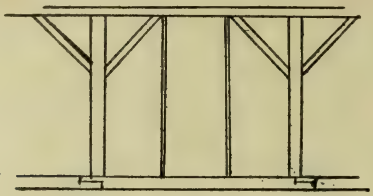
The N. S. A. College piggery, built in 1909, has given excellent satisfaction. It is dry, well ventilated and bright. The accompanying photo will give a general idea of the structure, while the sketch of the ground plan will give pen arrangement and dimensions. A striking feature of this piggery is that the windows are placed in the roof (facing south) and the sun pours down into the single row of pens making them very dry and light. The system of ventilation, as described subsequently, is also very good.



Round Swine Barn.

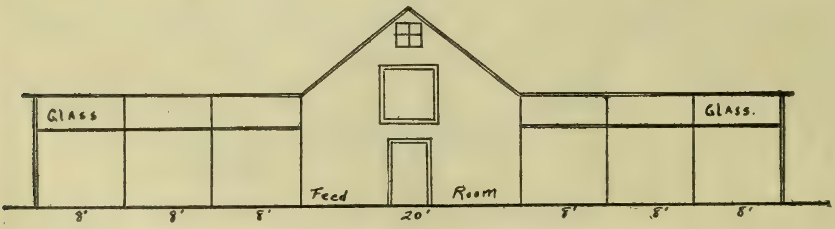


Round Swine Barn.

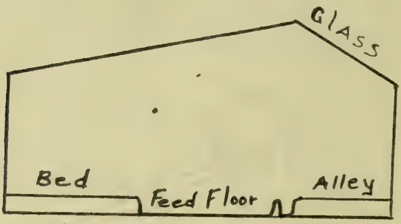


Fram of Wall for Round Pig Barn.

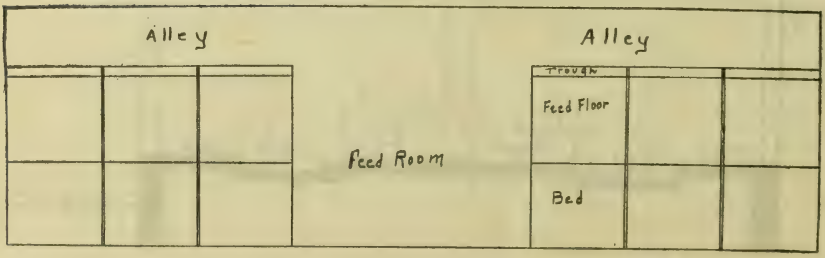
This type of building appeals to many. The few buildings of this type in use are giving excellent satisfaction. Ventilation and sunlight are easily arranged for, feeding is more easily done than in any other type of building. The accompanying illustration will give a general idea of a satisfactory arrangement of pens with trough, feeding floor, bed and yard. An arrangement of gates and doors makes the shifting of pigs or manure easy.



Installment Type of Swine Barn.



Cross Section.



Ground Plan Installment Type of Swine Barn

The installment type of swine barn has a number of advantages. The three important factors, dryness, light and handiness are easily and cheaply provided in a building of this type. It can be built any length and at times added to, to suit the needs of a growing herd. The central feed room being the base of feeding operations the building may be extended either east or west as far as desired, shown by the ground plan. The sketch of a cross section shows the floor arrangement and also the position of the glass. The front elevation sketch shows, position of glass, doorways to feed room. The frame for a building of this type may be spruce poles or light timber or double 2″ x 6″. Straight spruce poles 6″ in diameter answer very well and can be easily spiked to a double 2″ x 6″ sill and plate. The side walls may be of rough lumber and shingles. The floors should be of concrete. A building of this type 70 feet long could be built by a handy farmer for less than $400. A building very similar to the foregoing was erected on the College Farm for the accomodation of our herd bulls at a cost of $350.00, in which spruce poles were used to construct the frame and rough lumber and shingles to make the walls.

Floors.

The question of flooring material best suited to pig pens is an unsettled question. Many concrete floors are used but they are cold, hard on the pig's feet and often wet. Concrete floors when covered with plank are very satisfactory if the planking is slightly raised above the surface. Spruce 2″ x 4″ laid ¼″ apart upon a 1″ cleat will make a reasonably dry bed platform. Earth floors if properly bedded are warm and dry, and are easy on the pigs. Earth floors should be covered with woven wire to prevent rooting. Board floors are rather expensive, do not last very long, harbour rats and are cold if raised above the soil. If wood floors are to be laid it is good practice to pack sand or cinders right up to the top of the joists on which the floor is to be nailed. This will keep out the rats and prevent cold air circulation beneath the floor.

Partitions.

It is advisable to have all partitions between pens tight at the floor and to a height of at least one foot. Above one foot the boarding may be sufficiently open that the inmates can see what is going on outside. Brood sows kept in such pens are more apt to remain quiet after farrowing than those kept in a close walled pen when there is noise of a disturbing character outside. Guard rails should be placed on the inside of all farrowing pens 6″ or 8″ from the floor and should stand out from the wall sufficiently to prevent the mother pig from crushing her little ones against the wall.

Size of Pens.

Large sows will require a pen at least 8′ x 10′, while small sows could do very well with a 7′ x 9′ pen. Pens for pigs that are being fed for slaughter need not be large, just sufficient room to feed and a dry bed space is all that is required. Pens 7′ x 10′ or 8′ x 12′ are very useful sizes.

Doors for pens should be 2′ wide and 2½′ high. In cold weather each doorway should be provided with a canvas or burlap curtain. Such is easily provided by nailing a piece of canvas to top of door frame and permitting it to hang down over the doorway, such provision will keep out considerable cold air.

Ventilation.

In a well ventilated, double walled building there will be but little condensation of moisture and consequently no accumulation of frost on walls. Good ventilation without draft is difficult to obtain. There are several satisfactory methods in use, one of which is in use in the College piggery. Above the rows of pens there is a false or slatted ceiling, 6 strips of 4″ lumber placed 1″ apart. Above this there is a space of 4 feet to the roof. This space is filled with straw. Set in the same line as the slatted ceiling there 3 box ventilators 10″ x 16″, each provided with a trap door at lower end and leading to a cupola above the roof. The fresh air intake is arranged for on the south side of the building. Five 8″ x 12″ openings each provided with a regulating door are situated 4′ from the floor on the south or alleyway side. Fresh air admitted on the south side of a building will be several degrees warmer than if admitted on the north. All ventilating systems require attention. Keep cold air from striking the pigs. Provide for the removal of moisture laden foul air and there will be but little trouble.

Whitewashing.

Frequent whitewashing of the inside of a pig pen is good practice as it increases the light materially as well as doing much towards disinfection.

HOME CURING OF BACON

By L. Stevenson, Professor of Agriculture, N. S. Agricultural College.

People travelling about city or country and having opportunity of dining on the cured product of the pig invariably say that the sweetest and most delicious bacon and ham are served in some well directed farm home, where the husband and the mother take a pride in everything they do.

Nothing in meats is more palatable than properly cured, nicely fried bacon or ham, and it seems that the really excellent article is more easily prepared in the farmer's own home than it can be prepared in the large packing plant, where employed labor does the work, in contrast to the work of the painstaking farmer in his own home.

No great skill or knowledge is required in the curing of bacon; just careful, painstaking work, proper attention to the few details that go to make success.

Living, as I have lived, for the greater part of my life near a large Ontario city, where three large packing plants were in continuous operation, two of which were pioneers in the Canadian bacon industry, and in a locality where the farmers prided themselves on the quality of the bacon they cured for use in their own homes, it puts me in a position to judge fairly what a farmer can do if he will only try and get his brains as well as his hands to work. The most delicious bacon and ham it has been my privilege to eat was the pork that I was raised on, cured by my own father and mother. Perhaps one develops a taste for those things he is used to, but there was something about the home cured bacon that was wanting in the product of the big packing factories where we used to sell the surplus of our pig crop.

I will now give the very simple method as practiced by my own people, which gave results for this reason: Every detail regarding cleanliness, low temparature, strength of pickle, time for smoking, etc., was carried out to the limit. Firstly, the pig was of the most desired bacon type, in good fit and weighing about 200 pounds. They were slaughtered when in normal condition and after fasting 24 hours, usually in the month of December when there was no trouble about getting a cool atmosphere, very necessary in bacon curing. After slaughter the pigs were permitted to hang until the following day, when the fat had become firm. They were then cut up neatly into the desired sections. Hams, shoulders, belly and loin neatly trimmed, ready for the salting or pickling cask. The ribs, surplus fat and trimmings from the parts desired for curing were used in fresh condition, the fat portions being at once reduced to lard, the ribs roasted as wanted, and the trimmings put through the meat chopper with seasonings and packed in crocks and then frozen. The hams, shoulders, loins and belly cuts were rubbed well with dry salt and piled on a bench for three days. After this "stacking" had been done, preparations for making the pickle were carried out, by way of providing large, clean casks of sufficient capacity to easily hold the meat, a sack of Liverpool salt, a quantity of salt petre and a sack of raw sugar, and a little potash or lye were also secured. After estimating the quantity of pickle required to cover the meat when in the casks, the procedure was as follows: For every gallon of water, add 1½ pounds salt, ¼ ounce lye, heat to boiling and skim, when cold add ½ pound raw sugar and ½ ounce saltpetre. The above quantities, making butone gallon of pickle, must be increased to suit the quantity desired. When the pickle was ready, the casks, which had previously been scalded, were packed with the pieces of meat, care being taken to brush off surplus salt before putting pieces in cask and placing in such a way as to avoid large, open spaces. When the meat is in cask, it should not come nearer than 3 inches from the top, thus leaving room for a cover and weighting down. The weighting down is done by placing an oak cask top on top of the meat and placing thereon a clean, heavy stone. When packing is complete, the pickle is poured on and the meat covered to a depth of 2 inches. It is left in this condition for four or five weeks and then taken from the pickle and allowed to drain, then hung up in the smoke house. After two days a smoke was started and kept going gently for a week. Green apple wood and corn cobs were used exclusively in smoking. Soft woods were unsatisfactory. As much smoke as possible, with the least quantity of heat, is desirable, the fire never being permitted to become so hot as to cause grease to drip. After smoking was completed, the meat, now thoroughly cured, was left hanging until approach of warm weather, when the various pieces were wrapped in clean paper and sewn up in heavy paper or muslin sack and then hung up in the cellar, or packed among the oats in the granary until wanted. Bacon and Ox Tougue cured in this manner always tasted good to me and I believe, if the same method were applied by all those who may be interested, they would benefit thereby.

There is not so much in the receipt for the pickle as some may imagine. Other things are of equal importance. The pig must be right, the treatment during slaughtering must be right, the cooling and cutting up must be right, the packing in the cask must be right, the wood for smoking must be right in that it produces a smoke that will impart a desired flavor, the man or woman that does the work must be right in that he or she is careful, scrupulously clean and neat in his or her part of the work.

Heavy salting will make the meat too hard and unpalatable, but such treatment may be necessary to save bruised or carelessly handled meats.

The saltpetre is used to give a pink color to the meat.

The lye or potash is used to break down the fibre of the meat and make it less hard.

Use a fresh pickle for each new supply of meat.

Keep a record of the number of days for each step and make any changes that may suit your individual case when you try bacon curing again.

If the cuts are large, leave in the pickle for one or two weeks longer than if you were dealing with the cuts of a light pig.

In smoking, use a hard wood with a decent smelling smoke, as there is a relation between the smell and the taste. Maple wood does very well when green.

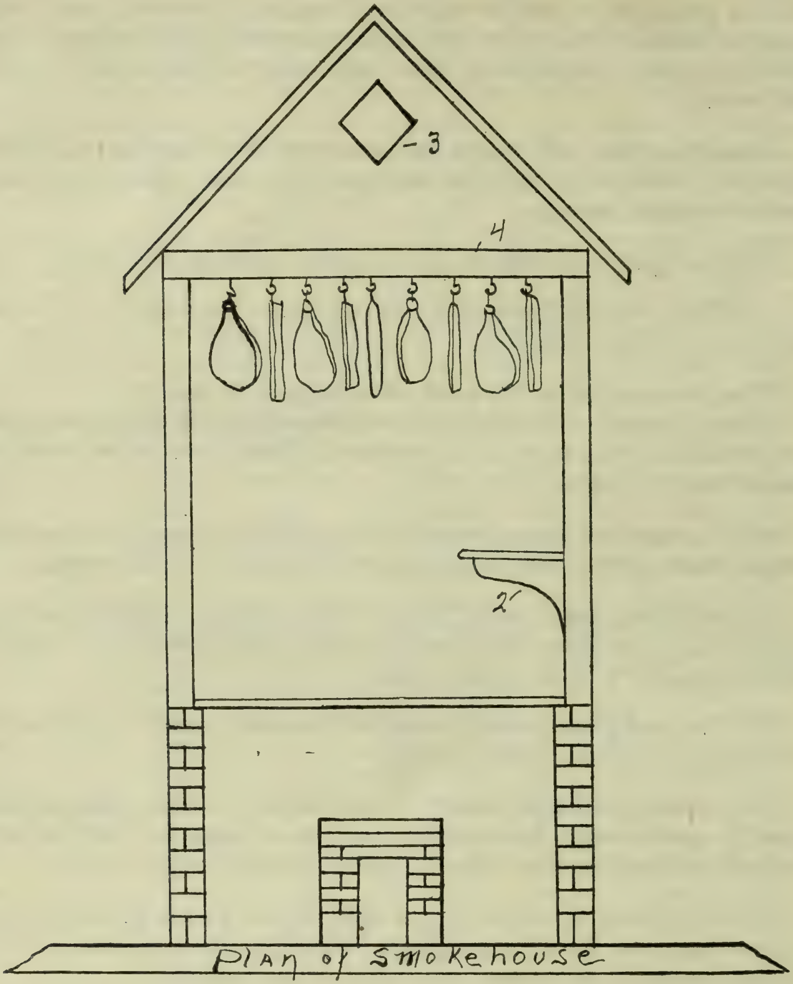
Water and a scrubbing brush will readily remove any mould that may form on cured meats.

To season sausage, use 1 pound salt, 2 ounces pepper and 1 or 2 ounces sage to each 50 pounds of meat. They should be well pulverized and mixed before adding to the meat.

If any pieces of cured or partially cured meats give evidence of spoiling, boil them or fry them, pack in jars and pour in hot lard to cover, seal up and set away in cool place.

The Smoke House.

Suitable structures in which meats may be smoked are preferably built of concrete, stone or brick since walls constructed of such materials are cool and have a tendency to prevent the heating of the meat. Where it is possible the smoke pit should be a little distance away and the smoke allowed to enter through a little tunnel which may be made of 8″ or 10″ tile.



Plan of Smokehouse.

1. Smoke pit in which fire is kindled.
2. Shelf, handy at times.
3. Outlet for smoke.
4. Rack on which to hang meat.

HOG RAISING CONDITIONS IN NOVA SCOTIA.

By J. R. Semple, Brule, N. S.

Can Hog Raising be made a profitable branch of farming in Nova Scotia? Like the Scotchman, I would like to answer the above question by asking another question. Does Dairying in Nova Scotia pay? I personally believe that dairying is a most profitable branch of farming, and there is room for great expansion in the dairy industry in Nova Scotia, and so long as we have the by products of the dairy, skim milk, butter milk, whey, etc., will we have the hog as a partner with the dairy cow, to turn this raw material into a source of profit for the farmer.

The raising of hogs at a profit most certainly depends on conditions; a good deal depends on the man. He must give attention to details, for little things count; but the main source of profit depends on cheap feeds, principally such feeds as roots, rape, alfalfa, clover or any other green crop that can be most conveniently grown on the farm.

To feed hogs profitably it is necessary to begin with the brood sow which should be selected carefully. She should be well bred, (not necessarily pure bred), good type, possessing length, deep smooth sides, well sprung ribs, full hams well let down, smooth in the shoulder, head fine with good width across the eyes, slightly dished face, medium length of snout. In short, she should be an all round bacon hog, standing up well on feet and legs, for in this respect the hog is like the horse—no foot, no pig; and it generally follows that a sow that is weak in her legs and pasterns goes lame when she begins to raise litters; and I would like to emphasize the importance of having the breeding sows and boar kept taking a certain amount of exercise right along to keep the feet and legs in good condition to stand the strain of breeding.

Have the sow mated with the best boar available to farrow (for a spring litter) about in March, so that a second litter, coming in the fall, will get a good start before the weather gets too cold for the little pigs to run out some, as the fall litter has the disadvantage of the spring litter in this respect—that they are generally more confined for the first few months, which I think accounts to some extent at least for so many crippled and unthrifty pigs in winter.

The food for the brood sow through the winter while carrying her young, need not be expensive. If a good crop of roots have their proper place on the farm, and while turnips are better than no roots, there is nothing that will take the place of a good supply of sugar beets and mangels to cut down the cost of feeding hogs through the winter months; and to encourage exercise it is a good plan to feed some roots whole in the yard every day that it is fine enough for the sow to be out. This with a thin slop once a day for a drink will be all she will need to keep her in a good thrifty condition, increasing the meal part of it (according to the condition of the sow) as she approaches the time for farrowing. Though it is not necessary to have her fat, she should be in fair flesh, for if a good milker she will soon lose her surplus flesh nursing the litter.

Have the sow accustomed to her farrowing pen a week or two before she is due to farrow, and a little gentle handling during this time will make it easier to work with her (if necessary) at farrowing time. Have a warm dry place for the sow to farrow in, bedded with chaff or short straw, with a shelf around the wall about 6 inches from the floor to protect the little ones when she lies down.

I think that it is well to be on hand at farrowing in case everything should not go right. Avoid disturbing her unnecessarily, but a little care at this season sometimes means the difference between profit and loss.

If quiet after farrowing, do not disturb her by giving her feed, etc.; better allow her to rest, as that is what she needs most. A little drink with the chill taken off and a little middlings added, when she begins to stir around and look for something, is all she will need for the first 12 hours. After that begin to feed lightly, increasing as the pigs grow and need more feed; being careful not to overfeed at any time—better to underfeed than feed too much, and whenever the little ones begin to try to feed from the trough, have a shallow trough (where they can get at it away from the dam) supplied quite often with a little warm milk, adding a little middlings, increasing as they keep cleaning up the food and look for more until ready to wean.

The weaning should be carefully attended to by gradually shortening the feed of the dam for a few days, at the same time being careful to keep the litter well supplied with feed, so that when separated from the dam they will not miss her much.

Those intended for pork should be kept in good flesh right along, so that, whenever old enough and big enough, they will be ready to kill; but those intended for breeders should be kept in just good growing condition without getting them fat, with plenty of exercise through the growing period.

Now I think the most important question is what we are to feed to get a profit from pork when ready for market. With the available supply of milk, buttermilk, etc., on the average farm, I would at the start, add a little middlings or finely ground chop, preferably oats with the hulls sifted out, and given in a rather thick slop, being careful to see that the feed is always cleaned up and the pigs looking as if they wanted just a little more. Feed about 5 times a day for the first few weeks at least (after weaning) or until they begin to take some green fodder, which, at say four months, should form quite an important part of the ration. For late summer and fall feeding there is nothing in my experience that will take the place of a good crop of rape or alfalfa.

To go into any details about the growing of these crops would make this article, I fear, too long. I might add that from rape sown July 1st we began feeding September 10. It was then about 2 feet high. We have also another sowing on land from which we cut a first crop of hay this season, after which it was manured, plowed lightly and, after being well harrowed, was sown broadcast to rape about the first of August, and which at September 10th is an ideal pasture for hogs and pigs intended for breeders will need very little feed in the form of grain to keep them in right condition if they have plenty of rape to pasture on. Those intended for pork will, of course, need a little more grain feed in the form of meal, either fed dry and some drink given separately, or made into a thick slop and soaked 12 hours before feeding. However, it is better, I think, to make the fattening period as short as possible by keeping the pigs in good flesh while growing. In substituting alfalfa for rape I would prefer to feed the former, cut in the tender state and given in the pens, as the alfalfa plants will not stand pasturing in our experience.

Of course the above feeding applies principally to the feeding of pigs farrowed in the spring. For those farrowed in the fall I would have roots, preferably sugar beets and mangels, pulping them for the young pigs, mixing meal with them and allowing it to stand (better covered over with a sack) until it begins to heat a little before feeding. This helps to soften the meal, making it more easily digested, and being warm, is a better feed in cold weather, giving what drink is used separately. For a change, a feed of slop could be given occassionaly instead of the roots and meal. For the older pigs and those kept over for breeders, I would prefer to let them pulp the roots for themselves. They seem to enjoy it and the exercise is good for them.

As to the question of breed, as a breeder of Berkshires, I suppose it is only natural that I should prefer that breed. The following are some of the reasons why I prefer the Berkshires to other breeds. I like the Berkshires for their quiet contented disposition. If you happen to be a few minutes late with their meals they are not making a great noise about it. They mature early, that is, they are naturally fleshy and are ready to kill at almost any age; they are active and make good grazers; and will always give good returns for the feed you give them, both in quantity and quality of product.

SOME CONSIDERATIONS IN HOG RAISING.

By G. E. Day, Professor of Animal Husbandry, Ontario Agricultural College.

Cost of Raising Pigs.

Some years ago, the Ontario Agricultural College conducted investigations relative to the cost of raising young pigs until six weeks old, at which age they were commonly weaned.

*Foods were valued as follows: Meal of all kinds, including bran and middlings, $20.00 per ton; roots, $2.00 per ton; skim milk 15 cents per hundred pound.

It is assumed that the sow raises two litters a year, and that she nurses each litter six weeks. This would leave about nine and one-quarter months during the year that the sow would not be nursing pigs, and the cost of maintaining the sow during the time she is dry is estimated at 75 cents per month, it being assumed that the sow is fed as economically as possible during this time. The maintenance during the nine and one-quarter months at 75 cents per month amounts to $6.94, or in round numbers, $7.00. Half of this amount, or $3.50, is charged against each litter, in addition to the cost of food consumed by the sow and pigs before the pigs are weaned.

Risk, interest on investment, labor and manure are left out of the calculation.

Twelve litters of pigs were used, which were weaned at six weeks old in each case.

The following tables gives particulars of each litter:

*See qualifying note at the end of this article.

Sow and litter	No. of pigs in litter	How Bred.	Cost of feeding sow and litter for six weeks.
No. 1	4	Pure Yorkshire.	$3.20
No. 2	9	Berkshire sire, Tamworth dam	3.08
No. 3	6	Pure Yorkshire.	3.87
No. 4	5	Yorkshire sire, Tamworth dam	3.70
No. 5	8	Yorkshire sire, Tamworth dam	3.04
No. 6	3	Yorkshire sire, Berkshire dam	5.85
No. 7	9	Berkshire sire, Yorkshire dam	4.31
No. 8	8	Pure Yorkshire.	4.33
No. 9	8	Pure Tamworth.	3.88
No. 10	8	Yorkshire sire, Tamworth dam	3.94
No. 11	6	Tamworth sire, Berkshire dam	3.33
No. 12	4	Tamworth sire, Berkshire dam	2.37
Average	6½		$3.74

To arrive at the total cost of the pigs at six weeks old, the service fee, and half the cost of maintaining the sow when dry are charged against the average cost of maintaining the sow and litter for six weeks, making the total cost as follows:

Service fee.	$1.00
Half cost of maintaining dry sow (½ of $7.00). .	3.50
Average cost of food for sow and litter.	3.74
Total.	$8.24

Average number of pigs in litter, 6½.

Average cost per pig six weeks old, $1.27.

The investigation was conducted several years ago when the prices for foods were lower than they are at present. If we add one-third to the cost of maintaining the dry sow and also one-third to the average cost of food for sow and litter, it brings the cost of the young pigs to $1.63 each, which is probably nearer present day cost than the original figures.

J. H. Grisdale, Central Experimental Farm, Ottawa, estimates that a breeding sow can be maintained during a whole year at from $12.00 to $15.00, under careful management, and produce two litters during the year. This approximates, very closely, the Ontario results, which, omitting service fee, make the cost of maintaining a sow half a year, and one litter of pigs for six weeks, $7.24.

Money Returns for Food Consumed by Hogs.

Some interesting figures have also been obtained relating to the value it is possible to obtain for food consumed by hogs, when the hogs are sold at varying prices per pound live weight. The investigation includes hogs fed by the College, as well as a large number fed by farmers throughout the province. The following summary shows the scope of the investigation:

Number of hogs	297
Weight when marketed	56,718 lbs.
Average weight per hog	190.9 lbs.
Total meal consumed, which included barley peas, oats, corn, middlings and bran	165,911 lbs.
Total skim milk consumed	112,500 lbs.
Total roots consumed	64,600 lbs.
Miscellaneous foods, such as pasture, green foods, etc., valued by experimenters at	$77.00

The pigs are valued at $1.50 each at weaning time. This amount, together with the value of the skim milk at 20 cents per cwt., roots at 10 cents per bushel, and the miscellaneous foods valued at $77.00 is first deducted from the gross proceeds derived from the assumed sale of the hogs at each of the different prices per pound, and the residue represents the cash received for the meal consumed by the hogs. The following table shows the prices obtained for feed, under each valuation of the hogs when sold:

Prices realized for foods consumed by 297 hogs.

Assumed selling prices of live weight	Meal including mixed grain middlings and bran	Milk	Roots
	per ton	Per cwt.	Per bu.
If sold at 4½ cents per pound	$20.45	$0.20	$0.10
If sold at 5 cents per pound .	23.87	20	10
If sold at 5½ cents per pound	27.29	20	10
If sold at 6 cents per pound	30.71	20	10
If sold at 6½ cents per pound	34.13	20	10

Figures such as the above, obtained from a large number of hogs fed under varying conditions, carry considerable weight. They show that the hog is able to give a good account of the food he consumes, provided he is handled with intelligence. Of course, the figures in the table are averages. Some experiments showed larger returns, and some did not show as large, but it is worthy of note that two experiments which showed exceptionally good results were omitted from the computation in order to make the results as conservative as possible.

WINTERING BROOD SOWS.

By J. H. Grisdale, Director Experimental Farm, Ottawa.

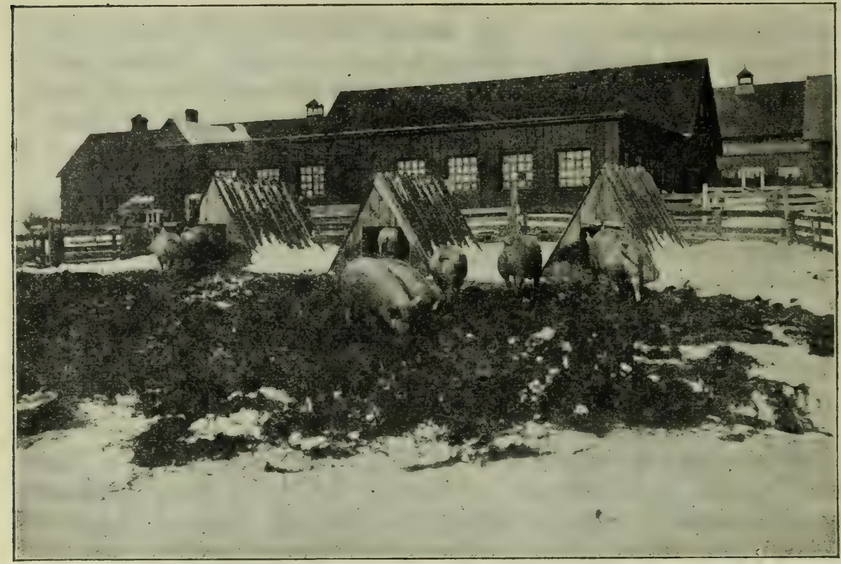
Wintering the brood Sow under average conditions in Eastern Canada is a difficult problem. In Nova Scotia, climatic conditions are of course rather less difficult than in the other Eastern provinces. But in Nova Scotia as elsewhere, whether local conditions be peculiarly favorable or the reverse, certain requirements of breeding stock, be they horses, cattle, sheep, swine or poultry, must be carefully considered and provided for as fully as possible.

These requirements or conditions are a dry bed or shelter affording protection from storm and wind, wherein to sleep, plenty of fresh air, abundance of exercise and a sufficiency of bulky, succulent feed of the kind to supply material for bone and muscle building.

Housing.

The practice of shutting up brood sows in small, warm pens and feeding them in such a way as to keep them fat and comfortable, while very often followed, is highly objectionable. Repeated experiments have shown us over and over again that such treatment practically always results in at least partial failure and the sow is blamed for not being a good brood sow whereas the fault has been with the attendant, not with the sow.

Carefully-conducted experiments carried on here have shown repeatedly that sows getting plenty of exercise may be expected to give larger litters of more robust pigs than sows fed similarly but confined in cramped quarters affording no room in which



Cheap and healthful housing of Brood Sows in winter time at the Central Experimental Farm, Ottawa.

Brood Sows in winter time at Central Experimental Farm, Ottawa. One lot feeding on clover, the other on grass.

to run around. Sows given the run of a large shed or covered yard or even out on the open may be expected to move around enough to keep them in good condition in this respect.

Brood sows seem to do better when left to rough it a little rather than when given special care, a too rich or too abundant food supply and warm houses. They should, one thing is certain, no matter how housed or fed, be given a chance, or forced, to take considerable exercise.

Farmers who pamper their brood sows all winter are usually disappointed in the spring with weakling litters, or as often happens, batches of dead pigs are the returns given for much care and generous feeding.

At the Central Experimental Farm, we have for a number of years been wintering our brood sows outside the main piggery. We winter, under normal conditions, about fifty head. They are divided into groups of from four to six sows and each lot is allowed a good large yard in which to run about. For shelter, a single-board cabin is used. the cabin is built on runners or sleepers, so that it can, if necessary, be moved from place to place with very little trouble, or, when the snow gets deep, it can be easily raised to a proper level. A cabin to hold four aged sows or six young sows (under one year) should be about six feet by nine feet, with the side walls about three and one-half feet high. From experience, we find that it is better to have only one cabin in each run or yard. If two or more cabins are in the same yard, with enough pigs to more than fill one pen, or even should there be sufficient pigs to fill each cabin comfortably or to more than fill one, they will usually all try to get into one cabin so injuring each other and often breaking the cabin.

It is of course necessary that the cabins be kept well bedded with dry straw. Last winter, we papered and double-boarded some of our cabins to compare them with the single-board cabins and found no apparent difference, either in the health of the sows or in the amount of food consumed; both lots did equally well, demonstrating clearly that a good dry nest, sheltered from the wind and weather, is all that is required by the brood sow in the way of sleeping accomodation during the winter months. From our experience up to the present, we would not think of changing this plan of housing our brood sows in winter.

Feeding.

Perhaps even more harm is done through unwise methods of feeding followed than by faulty housing. Clover hay, roots, bran, shorts, ground oats or even whole oats and skim milk, if available, are among the best feeds. The hay should be fed long, in racks. This method of feeding is effective in getting the sows to take enough exercise as they have to rustle around to get at the hay. It is surprising how much clover hay the sows will eat, expecially if they are aged sows of one year or over. If alfalfa is available, it is even better than common red clover for this purpose.

Mangels should be fed raw; turnips, however, are relished when cooked, but may be fed raw if finely pulped and mixed with the meal part of the ration. If the sows are allowed plenty of good, clean clover or alfalfa hay and roots, very little meal will be necessary for the first three months of the winter. If the weather is not too cold, it is well to feed a slop in the morning and whole roots (if mangels are used) in the evening. If cooked turnips are fed, then it would better to feed a slop twice a day.

In very cold weather, the sows should be fed pulped roots mixed with meal at night to help keep up the heat in the body.

The racks should be filled with fresh clover at least twice a week. If too much hay is put in the racks at once, the pigs will pick it over and waste some and will not eat as much of it as when it is given them fresh at short intervals.

The amount of meal to be fed will depend on the age of the sow. Young sows, carrying their first litters, require more meal than aged sows. The growth and development of the sow herself must be considered as well as, and is even more important than, the litter she is carrying. For this reason, we have found it necessary to give to our young sows wintered outside,, a more liberal ration of meal than to our aged sows wintered under similar conditions.

By feeding clover hay, mangels and a mixture of bran and shorts, equal parts, we have been able to winter our aged sows at a cost of 4 1-2 cents a day for each sow. With young (under one year) sows, the cost was increased by about one-half cent per day, although the young sows were much smaller. The increase in cost was due to the heavier meal ration it was necessary to give the young sows to keep them in as thrifty condition as the old ones.

The rations fed the sows vary from month to month, following a fairly regular gradation. To begin with, in early winter, coarse, rough feed is given in abundance. As the gestation period advances, this is changed to a somewhat more nutritious ration, until at a few weeks before farrowing time, the sows are being very liberally fed on highly nutritious but easily digested foods.

In early feeding more particularly, the aim is to keep the digestive organs comfortably distended by suitable food which shall not, at the same time, be such as to cause undue fattening.

An Experiment with Brood Sows.

Two years ago, we carried on an experiment with brood sows, giving them different treatment, both in the way of accommodation and rations fed. The details of the experiment and the results observed were as follows:—

Lot 1. Four sows were kept in a small, warm pen, fed on a ration of barley, corn and shorts, equal parts by weight, with two pounds of skim milk per day for each sow.

The sows got very fat and very weak, many having no hair. About half of the little pigs died almost at once and all were dead within a week after being dropped.

These sows had all done well the previous year when wintered outside and fed on the cheaper but better ration of clover roots and meal.

Lot 2. Four other sows were given similar accomodation but were fed differently, the ration consisted of a meal mixture of 200 lbs. shorts, 100 lbs. ground oats and 200 lbs. bran, roots by equal parts weight with the meal and 4 lbs. of skim milk per day.

By using this ration, we were able to reduce the cost by about 4 cents per sow per day, bringing it down to 8 1-3 cents. The sows gave fairly uniform litters, but the little pigs were not as vigorous and healthy as might have been desired. By a good of deal close attention for the first few days, we were able to save about two-thirds of the young ones.

Lot 3. Another lot of four sows that had done well the previous year were wintered as usual in the single-board cabin and fed a ration of clover, roots, shorts and bran.

These sows cost a little over 4 cents a day for feed, each, or a saving of another 4 cents per day on each sow wintered. All the sows in this lot gave large litters of excellent pigs, very uniform and strong, with a very low percentage of mortality.

One might infer from the foregoing that brood sows do not require very warm or very expensive pens wherein to winter. It is likewise evident that expensive rations are not advisable.

The Attendant.

There is, however, another factor which is of no small importance on farms where a considerable number of sows are kept. I refer to the personal interest or care that the attendant must take in the sows he is feeding if he is to get satisfactory results.

It is only not that such interest and familiarity will enable the sows to make better use of the food provided but kindly treatment will very certainly mean better results at farrowing time.

The Attendant should also in addition to giving the sows decent treatment throughout the winter, be expected, as the farrowing date approaches, to teach them to have confidence in him and to allow him to handle them with no show of fear or dislike on their part.

THE BROOD SOW.

By W. A. Churchill, Lakeside, Yarmouth County, N. S.

While details of the management and feeding of the brood sow may vary with conditions, she requires a ration that will develop a strong, vigorous frame, and nourish the growing litter, and sufficient care to insure her comfort, and render her tractable and easily handled.

In selecting the breeder, the best blood to be had, is the cheapest. She should be from a large, strong litter whose dam has proved her worth as a producer of good litters, and her capacity as a milker. The disposition of the dam should also be taken into account, as it will very likely show out in her descendants. The young sow should be liberally fed to produce a strong, roomy frame. While a fat condition is not desirable, a little extra flesh will do no harm.

The choice of breeds will depend on preference or other conditions. That of the writer is for the Yorkshire. As producers of large strong litters, with ability to raise them, and quiet disposition, they have no superior.

The feeding of the sow will depend largely on what crops can be grown most cheaply. as a large part of it, at least, should be grown on the farm. The summer feeding may be cheapened by a piece of good pasture, preferably clover‘ to be followed by such other fodders as oats, peas and vetches, rape, pumpkins, mangels and sugar beets; these, with dairy by products or a small grain ration, will keep a sow in condition to give good results at farrowing time. For winter feeding the mangel is one of the best farm crops. Swedes, though largely fed, are not as well liked by swine. Twenty-five or thirty pounds a day with five pounds of middlings or chopped oats etc., will keep a sow in good shape for work until farrowing time, when of course the grain ration must be increased as needed. For a short time before farrowing, good wheat bran can be used very profitably. Sudden changes of food at or before farrowing should be avoided, as they are apt to cause trouble. An approximate cost of feeding a mature sow rearing two litters, for a year is given below. It will doubtless appear large to some, and can probably be lessened in some cases.

Summer pasturage and green feed	$3.00
100 bushels mangels	10.00
42 weeks feed while dry,—882 lbs. @ 1½c.	13.23
10 weeks feed suckling pigs, 8 lbs. per day @ 1½c. per lb.	5.40

NOTE—This estimate should be compared with that made in the article by G. E. Day.

COMMERCIAL FEEDING OF HOGS FOR MARITIME MARKETS.

E. S. Archibald, Dominion Animal Husbandman, Ottawa.

Although climatic and other conditions may differ in county, province or country, yet the goal in view for every hog raiser is identical, namely, to obtain the greatest possible profits from his hogs.

An almost innumerable number of influences, aside from the actual feeding operations and food stuffs used, regulate our operations and govern our profits. Undoubtedly, elsewhere in this bulletin all such will be dealt with in detail. I would, however, repeat in so far as their influence on commercial feeding is felt and in so doing would divide my brief comments as follows:

1st. Breeds and Markets.
2nd. Housing, Care and Attention.
3rd. Food Stuffs.
4th. Methods of Feeding.

Breeds and Markets.

No inland province shows such a great diversity in these points as the Maritime Provinces. Lumbermen desire fresh fat pork, fishermen require salt fat pork, miners desire fresh medium fat pork. Cities and towns to a greater extent each year demand the leaner bacon type of pork. Hence, little wonder that along the shores and in lumber districts the Chester White breed and to a lesser extent the Duroc, Polands and thick pork type of Berkshires are so popular. Likewise in the vicinity of cities the Yorkshires, Tamworth and bacon type of Berkshire predominate. Yet there is an ever increasing demand from all districts for the Yorkshire on account of its prolificacy. When crossing is done with the special object of producing a fair quality of fat pork (of Chester type) at the same time getting large litters as in Yorkshires—then and then only should it be commonly practised. Many farmers in Nova Scotia are, by using poor foundation stock, wasting their time in crossbreeding when they might by the use of good sires build up a grade herd which would give far better feeding hogs. Aside from this the market for pure breeds is good and profits large. Example: at Nova Scotia Agricultural College it was found that Yorkshire sow in two litters had twenty pigs,

The cost to keep sow one year was equivalent to six pigs at $3.00, $3.00 being market price for feeders at weaning,

Fourteen pigs at $3.00 equals $42.00 which was the minimum profit, as $4.00 and $5.00 were ruling prices.

Keep the breed suitable to your individual taste, and market demands, but either follow grading or pure breeding according to means and markets to which you cater.

Housing, Care and Attention.

The average Maritime Province farmer is all too backward in methods of above. Stop and consider the number of farmers who provide no other shelter for feeders or brood sows than the manure pits. The old impression is that the darkest, dirtiest hole on farm must be the pig pen. Some have corrected a few faults but have intensified others, and hence condemn modern housing conditions. I would summarize desirable conditions for feeding as follows:

1. Winter feeding outside is possible but costs forty to sixty per cent. more in feed than inside feeding; hence in order to get the most from our investment in stock and in mill feeds and by-products we must have the following conditions.

Winter house feeders—not too cold but not warm at the expense of dryness and ventilation. I would refer readers to the article contained in report of J. H. Grisdale, Central Experimental Farm bulletin for 1910 where is shown the value of dryness and ventilation in feeding.

2. For sanitation and comfort, light in abundance is essential to feeders at all times save in the heat of summer when

some dark cool shelter should be provided, but pigs allowed to come and go at will. Compulsory exercise should be given by feeding elsewhere than at shelters.

3. At Nova Scotia Agricultural College and Central Experimental Farm, sows have been wintered cheaply in rough shelters, dry but cold. Wintering sows outside cost 25 per cent. more in feed, but the exercise gives stronger and larger litters. At the N. S. A. C. sows are outside most of the time and fed outside even in the coldest weather. Exercise for all pigs is essential and especially the pregnant sow or young litter as the condition of each depends on it, and in consequence the productiveness of the feeder. Again, in order to get large, strong litters the sow must have exercise and proper food.

4. Prominent among the ailments that have come to my notice are cases of crippled pigs in both breeders and feeders, of rheumatism, and of lung trouble. For these, damp dark quarters and a lack of exercise are largely responsible.

Thumps and scours in the litters are due to improper feeding of the sow and filthy dark quarters.

Parisites both internal and external are due to filthy quarters.

Tuberculosis is due to contagion from cow's manure, etc., and bad quarters. Never let pigs root in cow manure from contaminated herds nor in any cow manure pit unless horse manure is present. In fact all diseases, contagious or otherwise, of the various parts of the animal system may be almost entirely eliminated if the operations of feeding, housing, care and attentions are correct.

I mention the above only to show how closely related are these subjects to that of actual feeding and how upon each alike do possible profits depend.

Food Stuffs.

Now let us briefly review the food stuffs available to Maritime Province swine feeders, to show their comparative values for pork production, and in so doing considering only the feeding of pork for the butcher. In feeding such stock the aim of the feeder should be to:

First–Keep the animal in good health.

Second—To supply such foods as contain correct proportions and quantities of bone, muscle and fat producing elements.

Third—To make gains as cheaply as possible.

In order to do so we must have:—first, roughage and succulent feeds, second, coarse grains; third, mill feeds of a more or less concentrated nature.

Let us consider these food stuffs in some detail.

Roughages.—In the humid conditions of the Maritime Provinces, no feeds grow more freely or are produced more economically than clover and roots.

Turnips, mangels and sugar beets are readily grown in most districts. It is commonly understood by feeders that they are of value in swine feeding in the order opposite to that above given.

Let me cite experiments at the Central Experimental Farm, Ottawa, re this, which prove that this idea is founded upon palatibility alone and even then, that it is not necessary to cook turnips in order to make them palatable and to get the cheapest grains.

In 1905 feeding hogs were pastured on root ground and all roots eaten but turnips less ravenously so than mangles and sugar beets which were followed deep into the ground, thus proving their greater palatability only.

In 1912 an experiment in feeding roughage in winter quarters shows the following:

	Cost per lb. gain in feed values.
Meal and milk	3.8c
Meal turnips. cooked	4.7c
Meal turnips, pulped, raw	4.9c
Meal pulped, mangles, raw	5.1c
Meal water	5.1c

The meal consisting of mixture:

200 lbs. gr. barley
100 lbs. gr. oats
200 lbs. shorts.

and mixture fed equal parts by weight with other ingredients of ration—all elements valued at market rates.

The above shows the high food value of raw pulped turnips when the taste for the sweeter roots has not been acquired. References will be made later to inadvisability and waste of money in cooking.

Turnips may be grown in the Maritime provinces far cheaper than in Ontario—why then are Maritime farmers not raising and feeding more?

Ensilage—of corn—is not very acceptable to fattening pigs but with dry meal added, makes a fair ration. Clover and alfalfa silages are more acceptable. When fed in limited quantities these silages give variety but they are too rich in crude fibre to constitute part of a fattening ration.

Apples of a refuse sort may be used to advantage. Although not of particular value to fattening hogs when fed in large proportions, yet they add succulence to a meal ration and assist in economizing. Brood sows seem to do much better on this ration. It is peculiar that more farmers in Annapolis Valley do not utilize this cheap succulent feed in rearing and finishing more swine.

Potatoes.—Large quantites of refuse potatoes are annually available for hog feeding. Careful experiments at the Central Experimental Farm, Ottawa, have proven that where fed alone in the raw state potatoes scarcely sustain life. Raw potatoes with meal are valued slightly for succulence. Cooked and fed at the rate of 20 lbs. meal to 100 lbs. potatoes they make an excellent fattening ration and produce fair quality meat.

Pastures.—For cheap summer pork production pastures are almost indispensable. Rape and clover pastures or paddocks, are available to all Maritime provincial farmers and should be utilized.

The following results speak for themselves; full values being given all feeds consumed. In 1905 the following experiment was conducted at the Central Experimental Farm, Ottawa, and reported by Mr. J. H. Grisdale as follows:

	cost of 100 lbs. gain
Lot 1. Alfalfa pasture	$3.67
Lot 2. Red clover pasture	3.52
Lot 3. Root pasture	3.82
Lot 4. No pasture. Fed with roots	3.09
Lot 5. No pasture and no roots	4.83

Note:

Lot 5—Pigs were flabby, soft and expensive.

Lot 4—Best bacon—not so much bone and muscle as Lots 1, 2 and 3.

Lot 3—Somewhat paunchy.

Lots 1 and 2—Good.

At the Experimental Farm, Nappan, N. S. experiments covering several years were conducted which might be briefly summarized as follows:

Pasture fed pork may be produced from 5 to 25 per cent. cheaper than pen fed pork. However, pigs do not finish so well on pasture but to counteract this the development of bone is much greater.

Skim milk is of great food value for swine when fed in proper proportions but so often do we find Maritime farmers over-feeding this article in order to save the meal, with the following result:—curly haired, paunchy (sometimes scouring) unprofitable pigs and small if any return from milk fed. Summarizing the most careful data re skim milk collected at the C. E. F. and Nappan you will note:—

1. As quoted re roots—its great feeding value.

2. When substituting ½ of a ration of middlings, barley, rye and wheat with milk—1 lb. meal equals 8.43 lbs. milk.

3. When substituting ¼ ration of peas, wheat and rye; 1 lb. meal equals 8.82 lbs. milk. In other experiments even better results were obtained so that skim milk is worth 1-6 to 1-5 that of mixed grain.

4. For fattening swine over 100 lbs. in live weight, it is economical to feed not over 5 lbs. per day.

5. Skim milk gives the best results when constituting a small part of total ration.

Buttermilk and whey may be used about as skim milk with about same results.

Rough grains (home raised) which Maritime Province farmers find most economical in pork raising are Barley, Oats, Wheat, Peas, Buckwheat and Rye, all of which should be crushed or ground.

Although Beans and Corn are commonly used and are quite economical feeds, they produce a low quality, soft pork quite unlike the above six grains, and, as these two are not locally raised, we can largly dispense with the same. Those which we should raise and feed to advantage are:—

Barley.—Barley should be grown by every farmer who wishes to produce most economically the best quality of bacon. Even for pork production barley is but slightly below corn. Although not good for very young feeders, it can always be used to advantage especially when fed with peas, oats, shorts or oil meal.

Oats.—Oats contain twice the hull and crude fibre of barley; hence for very young pigs are not good unless sifted. For feeding the growing hog of three months and over, can be used to advantage when 3 parts oats to 1-2 oil meal. Small wheat and oats,—equal parts—ground makes splendid growing meal feed.

Wheat.—Wheat is best fed as above or with equal parts ground barley, bran or shorts.

Buckwheat.—Experiment at Nappan shows buckwheat for feeding about same as middlings.

Central Experimental Farm experiments showed:—

(*Dr. Robertson*)—Buckwheat is a little lower in food value than wheat.

(*J. H. Grisdale*)—Poor quality bacon.

Peas.—Peas make A1 bacon and are good for young pigs, (always fed ground), but should never be fed alone as they make a hard dry meat. Fed with oats, barley, corn ,bran or shorts, peas are very satisfactory. At Nappan, experiments showed that oats and peas are better for bacon production than oats and corn, and with but little more cost per pound.

All Maritime farmers should, if possible, raise this valuable leguminous crop to enrich soil and cut down the bills for mill feeds.

Rye.—Similar to but not of as high food value as wheat. Fed with oats and barley is satisfactory.

Mill Feeds.—Those which can be used to greatest advantage in producing the most economic bacon and pork in the Maritime Provinces are:—

1 **Middlings.**—When fed alone, middlings makes a soft pork, but when fed equal parts with feed flour and skim milk, it has very cheaply, produced a high quality of bacon.

Following are the results of a feeding experiment at Nova Scotia Agricultural College during 1911. These pigs were fed ninety days as a finish, and with the following rations and results:—

Cost per pound gains on a ration of middlings and milk was 6 cents per pound.

On a ration of 1-2 middlings to 1-2 feed flour and milk gains cost 4.62 cents per pound.

On ration of Schumaker meal and milk gains cost 7.1 cents per pound.

In all cases uniform root rations were fed.

Middlings with barley and peas or corn makes a splendid ration for fattening pigs.

2 **Feed Flour.**—As seen above is satisfactory when mixed with middlings or oats but fed alone is too heavy and will cause indigestion.

3 **Shorts.**—As we now buy them are mostly reground bran, but if good (showing high per cent. white meal), are especially good for young and growing pigs.

Experiments at Central Experimental Farm show a mixture of shorts 4 parts, and oil meal 1 part produced 6-10 lbs. gain per day at a cost of $2.80 per cwt., live weight.

Shorts with oats and barley makes a splendid growing ration. (*See roots comparison.*)

4 **Corn Meal.**—Corn Meal with oats, peas, barley, shorts, or bran gives good returns and a fair quality of bacon.

When fed at the rate of corn meal 1 lb., to skim milk 2 lbs. gives rapid, cheap gains but without the milk gives soft pork.

5 **Oil Meal.**—Oil meal is very good for newly weaned pigs but should never be more than 20 per cent. of the meal ration. Oil meal fed with shorts is good for feeders but in such proportion is not good for finishing bacon or pork.

6 **Tankage and Blood.**—Tankage and blood in small quantities are good to replace part of the milk ration.

Feeds which should not be used are:—

1 **Stock Foods.**—These are too expensive as seen in results of experiments at C. E. F., Ottawa and at Experimental Stations in England and U. S. (*Note*)

(*Note*)—Salesmen use possible medicinal qualities of some stock foods as an argument in favor of their use. This is nonsensical as the healthy pigs do not require any medicines and the sick pigs should have no food suffs of the richness claimed by these agents.

2 **Complete Foods.**—Foods such as Schumacker, as seen above do not as a rule produce as economic gains as grains, mill feeds or a mixture of the same made in correct proportions by the farmer. The reason for this is that they as a rule are, first, not uniform in composition; second, too high in content of crude fibre, and third, too expensive.

3 **Bran.**—Bran for feeding of market pigs is too coarse and indigestible.

4 **Cottonseed.**—This seems to have a poisonous effect on pigs.

5 **Gluten Meal.**—This food is not palatable for pigs.

Many other mill feeds of a more or less desirable nature are found in use but the above are those which are commonly on our Maritime markets.

Preparation of Feeds.

(a) **Ground vs. Whole Grains.**—Experiments at C. E. F. Ottawa, relating to the value of grinding were conducted with rations following:—

1—Peas, barley and rye
2—Peas, barley, rye and skim milk
3—Oats, barley and peas.

Although showing variations, yet there was again of 5 to 10 per cent. resulting from grinding, owing to greater digestibility of the grains.

In Maritime Provinces with present grain prices, grinding pays.

(b) **Cooked vs. Raw Grains.**—There is no difference in grain required per lb. gain, hence cooking is more expensive and cost per lb. gain greater.

Cooked vs. Raw Roughage.—Potatoes and clover hay alone pay for cooking. (*Note.*—See root comparisons.)
(c) **Soaked vs. Dry Grains.**—Soaking is best if whole grains are fed. Soaked grains are better digested than dry grains when soaked 24 to 36 hours but if not soaked that long experiments show better results from dry grains.

Dry feeding is wasteful.

Wet feeding in winter contains too much water for cold weather feeding.

For fattening pigs a thick wet slop is best, (uncooked).

(d) **Warm vs. Cold.**—Young pigs during winter, in cold quarters should have warm feed at least once per day.

From the foregoing brief review of comparative value of food stuffs will be seen many rations which are highly profitable. The following is a summary of methods suggested by writer for production of two litters of pork per annum.

Points on Feeding.

1. In every case remember that the size of a litter depends largely on the sow.

A sow fair in flesh and gaining when mated will give a large litter.

A sow poorly nurtured and lacking exercise while pregnant will give a weak litter.

A sow well nurtured and exercised while pregnant will give a strong litter.

Hence profits in pork feeding start with sow before mating.

2. Feed and tend the sow carefully and just before farrowing take to quiet quarters, cut down meal ration and substitute with warm thin slop, this to keep down inflammation of udder and to keep bowels lax. Attend sow well before farrowing so she will be accustomed to you and not be ugly when in pen during or after parturition. Keep exercised up to farrowing—the litter comes easier, quicker and stronger.

3. Feed the sow and tend carefully after farrowing. Give her first a very thin warm drink of middlings and water.

The following points are essential to the sow's health:—

Do not over-feed especially in first two weeks as it will mean thrump, diarrhoea and dead young pigs.

Keep the sow in clean quarters.

Exercise, and handle carefully each day.

Feed the sow well from the second to the fifth week, then gradually cut down the feed in order to wean the pigs. As soon as weaned put her in good shape for the next litter and never breed untill in fair condition and gaining in flesh.

4. In weaning the pigs the following procedure gives good satisfaction.

(a) As soon as youngsters show a tendency to feed at mother's trough provide a creep and separate trough for them.

(b) A little dry shorts is a good starting feed in weaning.

(c) Later a thin sweet skim milk and shorts slop is excellent, care, however, being taken that this never sours in their trough.

(d) A little oats, barley or corn scattered in the bedding teaches young pigs to rustle for their food and provides much needed exercise.

(e) As soon as weaned, gradually thicken the milk and shorts slop, and add fine ground oats and, if available, a little corn meal. Particular care should be taken not to overfeed, for in so doing pigs almost invariably develop into paunchy, curly haired, sway backed unthrifty and unprofitable individuals.

In feeding the summer litter, for the first three months after weaning, a good meal mixture would be shorts or middlings, 2 parts, fine ground peas or oil meal, 1 part, and feed flour, 2 parts, this to be fed soaked 24 hours as a thin skim milk slop either in conujnction with pasture, or in a paddock with green feed (rape, clover or peas) supplied. Closer confinement for the last 2 months is necessary during which time it would be well to gradually increase the shorts and decrease the ground barley or oats, making the slop much thicker and if necessary dispensing with the milk.

In feeding the winter litter, any of the rations above mentioned may be used to advantage. Reasonably warm, light dry quarters with sufficient exercise are indispensable for economic feeding. Both the succulent feed, either raw turnips and mangels or cooked refuse potatoes together with the exercise may be largely diminished and the meal ration proportionately increased during the last few weeks of finishing. Access to the earth, or in case it is frozen, to salt, sods, ashes or bone-meal is necessary to both brood sows and feeders during the winter months.

Finish the feeding hogs to go on the market at 170 to 200 lbs. live weight. Our markets demand this weight as it produces the best quality of meals. From our standpoint as farmers, far more economic gains are made up to this weight than afterward.

Finish your bacon and pork, not to the extent of softness, flabbiness and overweight but to a firm uniformly well covered pig of about 180 pounds.

When Maritime farmers decide to put such uniform produce on the market, then and then only they will make the greatest possible profits in feeding and command the invariably higher prices of the discriminating markets.

A PLAIN STATEMENT OF PROFITS MADE FROM BREEDING PIGS.

By P. L. Morse, Berwick, N. S.

Below you will find a summary of my pig account for the last two years.

I grow pigs to sell at four weeks old and kill very little pork. If one has good luck, if you may call it luck, there is a great deal more money in this business than in raising pork, but the risk is greater.

You will notice a great deal of difference in the profits of the two years. I will explain. In 1911 all my five sows had two litters and I lost very few pigs. This shows what can be done if everything goes well; but, in the second year, I carried three sows without having pigs and lost two young sows, which affected the profits materially. Taken on the whole, however, I have done exceptionally well, much better than the average.

I have kept strict account for six years and the profits have run from 65 per cent. up with the exception of last year.

A word as to the feeding: I always plan to have my breeding stock fit to kill at any time and am not afraid of having them too fat. My sows are fed grain the year around and after they are through suckling a litter of pigs are in very nearly as good condition as they were before.

In the summer, the pigs have the run of two acres of good pasture. This keeps them in good condition. I never change the feed of a sow after she pigs. I simply increase it after a few days and I have never had a sow injured by over feeding.

In regard to farrowing, I give the sow a good pen bedded with short straw and leave her strictly alone and she will do all right if she is not sick but I find that if a sow is sick she gets careless and lies on her pigs.

I never give buttermilk to a sow sucking pigs as it is sure to cause intestinal trouble in the little pigs.

I castrate at three weeks of age and sell the young pigs when they will weigh fifteen pounds but do not take them all off the sow at once.

I always keep pure bred Yorkshires as I have no use for a scrub pig. The best is none too good. The Yorkshires are very prolific, one sow giving me 94 pigs in seven litters.

PIG ACCOUNT, 1911

To Stock on Hand Jan. 1st	$150.00	By Pork sold	$ 74.06
Middlings	112.50	80 young pigs	244.50
Bran	36.70	Boar service	43.75
Meal	3.20	Stock on hand Dec. 31	212.50
Pigs	20.70		
Flour	7.20		
Whole corn	1.45		
Balance	243.06		
	$574.81		$574.81

PIG ACCOUNT, 1912.

To Stock on hand Jan. 1st	$212.50	By Pork sold	$106.41
Middlings	120.25	89 Pigs	237.50
Bran	54.00	Boar service	13.00
Pigs	9.15	Stock on hand Dec. 31	87.50
Flour	1.85		
Meal	4.95		
Balance	41.71		
	$444.41		$444.41

DISEASES OF SWINE—THEIR CAUSES, SYMPTOMS, PREVENTION AND TREATMENT.

By J. Standish, V. S.

A large proportion of the diseases of swine are caused in the same way, viz: improper feeding, insufficient exercise, irregularity in feeding and watering, dark damp badly ventilated pens dusty bedding and carelessness in breeding, producing an hereditary predisposition to certain diseases.

Crippling.

Symptoms.—At first, stiffness or lameness in one or more legs, usually the hind ones. The animal lies most of the time and the lameness increases until the pig becomes unable to walk. It may drag itself to the feed for a time, finally however becoming unable to do so. If compelled to move, it will squeal with pain. Appetite becomes indifferent until gone completely and death results. One after another in the pen becomes attacked, causing the attendants to suspect some infectious disease, which is not the case. All are attacked from the same cause and generally the best pigs first.

Cause.—Too much strong food, as grains either whole or crushed, insufficient exercise, damp stabling, any one of which is sufficient, but the combination is more powerful.

Prevention.—Exercise preferably on the ground; if in summer, in a grass field or plot; change of food, some milk, grass or clover, alfalfa or even weeds such as lambs quarter, pig weed mangle or turnip tops; if in winter, mangles, sugar beets or turnips steamed, alfalfa or clover and a reducing of the grain feed.

Treatment.—In the early stages the above preventative treatment will be all that is necessary. If in advanced stage, force exercise and give from two to six ounces of epsom salts dissolved in half a pint of warm water given as a drench and repeat in 24 hours. If first dose does not physic, reduce the feed, and feed only easily digested laxative food, as small quantities of milk, and wheat bran, or shorts, and roots and give 1 to 2 tablespoonfuls daily of a mixture of equal parts of sulphur, epsom salts and charcoal.

How to Drench a Pig.

Care should be taken in drenching a pig. Back it into a corner, raise the head slightly and have a piece of rubber hose about six inches long attached to a bottle or funnel. Place the hose in the side of the pig's mouth and pour the drench out of the bottle or funnel into the hose. The pig will chew the hose and receive the drench. If a piece of hose is not available, use an old boot, with a part of the toe cut out. Don't lay hogs you are drenching on their backs. It is dangerous.

Thumps.

Symptoms.—The animal is dull and constipated, breathes short, and makes a peculiar thumping noise.

Cause, Prevention, and Treatment.—Same as in Crippling.

Diarrhoea.

(Common in young pigs.)

Cause.—Some abnormal condition in the mother's milk.

Treatment.—Change the mother's food. giving good nourishing food of which a considerable portion is clean crushed grain, oats peas or wheat and bran being good and some skim milk. And place, where the sow can get at it well, equal parts of sulphate of iron, sulphur and salt and four times as much charcoal pulverized and well mixed. If she is greedy for it, at first only allow 3 or 4 tablespoonfuls twice a day for a few days, when it may be placed before her in quantity.

Eversion of the Rectum.

Cause.—Constipation, causing extreme straining to evacuate the bowels.

Symptoms.—A portion of the bowel protruding from the anus, sometimes a few inches and in some cases a foot or eighteen inches.

Treatment.—Raise the animal's hind quarters well up by pulling the hind legs over a round pole a few feet up from the ground or floor. Wash the parts clean with warm water. Empty the bowel by giving injections of warm water and soap. Then, oil the bowel with raw linseed oil and gently return by pressing back into itself. Then, prevent its coming out again by placing a stitch of strong linen from one hip point to the other placing two in the form of an X, having the cross opposite the opening in the bowel (the anus). Do not draw the stitches very tight and make each separate and, afterwards, give injections of warm water and soap twice a day until the bowels act freely. Give the sulphur and salts as advised in crippling; feed light easily digested food as advised for crippling and give exercise.

Constipation.

Constipation is caused in the same way as crippling and is at the foundation of nearly all the diseases of swine. It should be prevented by care in feeding sufficient succulent food, supplying water as needed and allowing, or, if necessary, compelling exercise.

Eversion of the Uterus.

Cause:—Excessive straining in delivering the pigs and expelling placenta or afterbirth.

Symptoms.—Protruding of the uterus or pig bed through the vagina appearing as a redish brown soft mass of fleshy substance attached to the vagina and vulva. Should not be confounded with the placenta or cleanings which are not attached to the vulva or vagina.

Treatment. Place pig in same position as advised for reducing eversion of the rectum. Wash the parts clean with warm water. Oil with raw linseed oil and return to position and retain in same manner as advised for eversion of the rectum. No further treatment is necessary other than keeping the sow quiet and feeding light easily digested food as warm bran mashes.

Difficult Parturition (or delivery of the young.)

The act is sometimes delayed by the attendant fussing about the mother instead of keeping away from the animal. Sometimes a large or dead pig may lodge in the passage or one may have the head turned back. In such cases, bathe hand with warm water and oil it with raw linseed oil or grease with lard and pet the pig until quiet. Then insert a finger, or, if a large sow and the attendant has a small hand, the hand may be introduced and the position of the pig discovered when it may be straightened and brought out, or a small iron hook may be introduced and placed in a jaw or eye or some soft part and careful traction applied, care being taken to guard the point of the hook from injuring the sow. Sometimes injected strained linseed gruel lubricates the part and aids delivery.

Deranged Tusks or Teeth.

Sometimes the tusks (two teeth above and below in each jaw) grow long and sharp pointed and, when the pig is sucking, pain the mother making her cross to her pigs and where there are a large number in the litter they injure each other while struggling for a teat or when laying in a pile the teeth of one perhaps wounding the hip of another, or it may be the knees or some other part of the body, and, when struggling for a teat, they wound each other's cheeks, side of the face, neck and shoulders causing black scabs to form, general emaciation and death.

Treatment.—If the sow is restless when the pigs are sucking, or one or more have the dark scabs about the head, neck or body, pick them up and examine for sharp teeth. If present, take a small pincer (a wire pincer will do) and break off all points which completes the treatment. Bear in mind that it is generally the strong one free from scab that has the worst teeth.

Castration.

While not a disease, castration is an operation that is advisable on most males and is so simple that all pig breeders should perform it safely. It is advisable to perform it at about four or five weeks of age and before weaning. Have an assistant hold the pig, the operator having a sharp knife (both knife and hands should be clean). Grasp the scrotum (or bag) with a testicle in it. Squeeze the skin moderately tight. Make an incision in the skin deep enough to allow the testicle to slip out easily. Then, grasp the testicle, pass the knife between the small and large cord and cut off the small cord. Then, pull out the testicle drawing the large cord until it breaks which will stretch the artery and prevent bleeding. Nothing more is necessary. The opening in the scrotum should be made low down to allow of free escape of any blood or effusion that may be present.

Scrotal Hernia.

In some cases a portion of bowel passes through the canal into the scrotum or bag. If so, the bag will be large and puffy or soft to the feel. Provide a needle and thread. Hold the pig's hind parts up gently. Press the part of the bowel back through the opening. Then open the scrotum. Remove the testicle as advised. Then, sew up the wound and when the parts heal the opening will close. No medical application is necessary.

The condition has an hereditary predisposition. So only hogs from perfect parents and litters should be used for breeding.

Abscesses.

A soft fluctuating lump may form in any part of the body, the result of inflamation caused by a blow or bruise.

Treatment.—Open at the lowest part making the opening large enough to allow the pus to escape easily. Then wash off with warm water once daily and apply a three per cent. solution of creolin or carbolic acid in water.

Wounds.

Wounds from any cause should be treated same as an abscess only it is not necessary to open them.

Fractures.

Occasionally pigs have a leg broken by getting fast in holes in the floor or in a crossway or from a kick or blow from a stick or stone.

Treatment.—Place alone in a small inclosure. Feed light and keep quiet.

Worms.

If sulphur, salt and sulphate of iron, equal parts, and ashes and charcoal eight parts, pulverized and mixed well and allowed as wanted are given, worms will not bother pigs.

Lice.

Lice frequently infest pigs. They may readily be suspected if the pig rushes against the side of the pen, the fence or other obstacle. Examine closely and if infested, the lice will easily be seen.

Treatment.—There are many remedies. Fish oil 12 parts, creolin 1 part; fish oil 12 parts, coal oil one part. Either one or a combination of the two sprayed on or rubbed on and repeated weekly for two or three times will remedy the condition, providing the pen is properly cleaned.

Scab.

A skin disease sometimes caused by severe scratching when lousy and occasionally from tramping through tall rape, particularly in young pigs and in pigs of all ages when allowed to roam through tall buckwheat whether green or ripe, excessive feeding of grain food and insufficient succulent food and exercise;sometimes sunburn if thin haired or have been kept in shade for a time and then let out into hot sun.

Symptoms.—Itchiness, small lumps appearing around the neck, behind the ears along the back and extending down the sides.

Treatment.—Provide shady pasture. Wash with warm water and soap. Then apply an emulsion of fish oil or raw linseed oil one quart and creolin two ounces. Repeat the dressing every two days for a week then once daily as long as necessary. Provide a clean wallow clay and water or a shallow running stream.

Hog Cholera.

Hog cholera is an infectious disease and generally proves fatal. It has not been introduced into this province and care will be taken by the Veterinary Director-General's department to prevent its introduction and, if it should be introduced, to stamp it out and all swine owners should aid in every way possible. To do so, some knowledge of the disease is necessary.

Cause.—It is an infectious disease and presents changes in symptoms in its various stages. At first, loss of appetite, cough and constipation, generally followed by diarrhoea and reddish spots on the skin along the flanks inside the thighs and occasionally a bloody discharge from the rectum.

Treatment.—Medical treatment is little use. Destruction of the diseased animals, burning the carcases, disinfecting the premises are advisable; but, on the appearance of such symptoms in two or more pigs, the nearest veterinary Inspector as well as the Veterinary Inspector General, Ottawa, should be notified, when a careful examination will be made and the best efforts applied for suppression.

Similar Diseases.—There are several diseases which may be confounded with hog cholera. Therefore it is advisable to be familiar with some of of them and some difference in diagnosis. The following are the chief diseases: epizootic or erysipelas which may assume even the spotted appearance of the skin. A bacteriological and anatomical examination aided by inoculation will decide. (Swine pneumonia is not fatal to pigeons.)

Tuberculosis.

An infectious disease, transmissable from cattle, birds or man to hogs, young pigs being more susceptible than old ones. Modes of infection are by contaminated food as milk from diseased cows, by consuming flesh of diseased animals or birds as hens afflicted by the disease, contaminated bedding as straw from a bed upon which a person affected has slept and from dust mixed with tubercular germs.

Symptoms.—In some cases cough or unthrifty appearance, but such symptoms are not always present as occasionally a litter may prosper, look fine, not cough and still be diseased. If one dies, (or if one is not thriving, kill it) make a post mortem examination and look for lumps varying in size from size of a grass seed up to size of a man's fist or larger. They may be in the lungs or along the sides of the lung cavity or on the surface of the diaphragam (the curtain that separates the lung cavity from the abdomen) or may be in or on the liver. If old, the pus will have hard lumps in it like bits of lime and will grit when knife is drawn through. Tubercular enlargements may be found in the abdominal cavity and not in the lung cavity or both may contain them. In all such cases, have the carcass burned thoroughly, boiled or buried deep, and neither animals or birds allowed to consume it.

Treatment.—When the disease is established, treatment is useless.

Prevention.—Care in feeding wholesome food and water and if doubtful or diseased milk must be fed, heat it to 160 degrees and keep it at that temperature for half an hour when it will be safe food. Provide clean well lighted and ventilated pens permitting, and, if necessary, forcing, daily exercise, especially for breeding sows.

The chronic forms of contagious pneumonia and swine fever possess great similarity to tuberculosis. Apart from the bacteriological results there is the fact that tuberculous deposits become calcarous (limey) in time and are also of various ages as a rule. Tuberculosis is frequently generalised and tubercules are found in the neighborhood of the tubercular ulcers.

Phythisis Verminales has been confused with contagious pneumonia in cases in which worms were found in the lungs.

The distinction of contagious swine pneumonia and swine fever is so difficult that doubtful cases must be decided by bacteriological examination and inoculation, the sero-diagnostic investigation not being reliable.

Variola or Swine Pox.

Cause.—Infection chiefly from man by means of bed straw. or from infected sheep on account of the animal occupying the same stall. Young pigs are more susceptible than old ones.

Symptoms.—Usually a general eruption breaks out over the entire body. There is fever, debility, loss of appetite and congestion of the mucous membranes lining the nose, mouth and eyes. Red spots appear on the head, throat, back, chest and inner surface of the legs which spots change successively into pimples, vesicles and pustules which finally dry up and leave black, concave, circular crusts.

Treatment:—Clean dry comfortable quarters, easily digested food, as roots, grass, bran mashes, crushed moist grains, milk and clean water.

As the disease is transmissable from pig to man, care should be taken in handling diseased pigs. Only persons who have had small pox or been vaccinated should care for pigs so diseased.

PART III.

Professor M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to submit my sixth annual report in connection with the work of Agricultural Societies.

As will be observed by the following report there are now 205 Agricultural Socieities in theProvince.

While the Societies have increased by five and the amount subscribed has increased, the total member ship is slightly less than last year.

The decrease in membership is due to the fact that Societies which here-to-fore changed to different breeds of animals frequently to please some of their members, are persistently adhering to one breed.

While this does temporarily prevent certain persons from joining the Societies, the beneficial results which are sure to follow such a course, must certainly increase the interest in Agricultural Society work as time passes.

The Agricultural College and especially the Short Courses held there are exerting a wide influence in the study of the different breeds of cattle and the conditions to which the various breeds are adapted. Thus selections are made after due consideration rather than as an experiment.

That the record of the "Dam" is becoming more and more a factor in the selection of the Sire is a pleasing indication of future Stock improvement.

From the Federal Grant to the Province for Agricultural purposes, $3000.00 was devoted to Agricultural Societies. $2000.00 of this was divided pro rata in the same manner as the Provincial Grant, the balance $1000.00 was given for special aid in the following manner: Any Agricultural Society which constructed a paddock for properly exercising their animals received a bonus of $10.00. About twenty Societies have availed themselves of this privilege and without exception they have expressed surprise at the beneficial results.

Amounts varying from $25.00 to $100.00 was given to Agricultural Societies which had the misfortune to lose through accident or disease valuable animals and to those which had to dispose of animals at a partial loss on account of their becoming useless. In this way several worthy Societies were tided over serious situations, the cause for which they were in no way responsible. The wisdom of this policy was so evident that it is proposed to continue to aid Societies in this respect and possibly to extend the grant of $10.00 for each paddock constructed by the Societies which require more than one.

The matter of changing the Agricultural Acts in so far as they relate to collecting annual subscriptions has been freely discussed during the year and at a convention of Agricultural Society delegates held during the Session of the Nova Scotia Farmers' Association, a resolution was passed asking that the Act be so amended that in future the subscriptions of Agricultural Societies be made up of a membership fee of $1..00 plus the amount of Service fees actually paid during the year.

From the fact that the Acts at the present time seem to admit of several interpretations, some change seems desirable.

The important matter of retaining valuable animals has received my constant attention, and while I am in a position to bring a number of proved animals to Truro for the purpose of having them resold, I have not so far had to do so.

Societies are learning the advantages of using such animals and I am therefore finding it less difficult to arrange exchanges and sales of older animals.

With the prospect of a largely increased number of paddocks and the consequent better care of Sires, we look forward to a great improvement in Live Stock from this source alone.

Respectfully submitted,

F. L. FULLER.

Previous Record of Agricultural Societies on Nova Scotia.

The fluctuation in the numbers and strength of Agricultural Societies in the Province during the last forty-nine years are shown in the following table, from which it will be seen that the number of Societies has been increased from the original number of thirty-seven to two hundred and five; membership from 1744 to 8503; subscriptions from $1859.00 to $13,256.73; and grants in aid from $3010 to $10,000.00

Comparative Statement showing the number and strength of Agricultural Societies organized under the Act for Encouragement of Agriculture in each year, for forty-nine years from 1864 *to* 1912 *both inclusive.*

YEAR.			No. of Soc.	No. of Memb's	Amont of Subscriptions.	Grants in Aid.
1st	Year	1864	37	1744	$1859 90	$3010 00
11th	“	1874	64	3971	4495 00	5830 50
12th	“	1875	66	4140	4757 75	5790 00
13th	”	1876	65	4150	5633 00	6255 50
14th	“	1877	74	4144	4860 00	6592 00
15th	“	1878	77	4138	4860 82	6478 00
16th	“	1879	79	4327	4829 50	6694 00
17th	“	1880	83	4697	5551 75	6548 00
18th	“	1981	86	5229	6186 12	6828 00
19th	“	1882	87	4833	5726 00	6606 00
20th	“	1883	88	4910	5489 00	6548 00
21st	“	1884	92	5064	6361 69	6835 00
22nd	“	1885	88	4592	5225 00	6556 50
23rd	“	1886	91	4532	5334 90	6653 00
24th	“	1887	85	4432	5171 85	6597 00
25th	“	1888	83	3986	4659 47	6361 00
26th	“	1889	82	4398	5170 10	6444 00
27th	“	1890	81	4152	5257 45	6420 00
28th	“	1891	81	4136	5172 29	6432 20
29th	“	1892	80	4273	5856 53	6525 00
30th	“	1893	81	4068	5051 55	6309 50
31st	“	1894	80	4398	4424 55	8000 00
32nd	“	1895	83	4597	5356 15	8000 00
33rd	“	1896	85	4888	5657 30	8000 00
34th	“	1897	89	5238	5997 16	8000 00
35th	“	1898	103	6155	7092 90	8000 00
36th	“	1899	119	6974	8502 45	10000 00
37th	“	1900	131	7362	9322 60	10000 00
38th	“	1901	151	8500	10771 53	10000 00
39th	“	1902	163	897	11688 43	10000 00
40th	“	1903	172	9444	13209 65	10000 00
41st	“	1904	166	8426	11634 80	10000 00
42nd	“	1905	164	8398	11888 90	10000 00
43rd	“	1906	166	8498	12900 51	10000 00
44th	“	1907	160	7849	15015 40	10000 00
45th	“	1908	167	7596	11284 77	10000 00
46th	“	1909	179	8090	12158 95	10000 00
47th	“	1910	187	8315	12732 45	10000 00
48th	“	1911	200	8567	13137 45	10000 00
49th	“	1912	205	8503	13256 73	10000 00

STATEMENT OF SOCIETIES FOR 1912.

There are two hundred and five Agricultural Societies in the Province which have qualified for participation in the grant for 1913. Eleven of the two hundred societies reported last year have failed to qualify and fourteen new societies have been added and two resuscitated.

The following list shows total number of members of the societies of each County, the total amount of subscriptions, duly declared to, according to the Provisions of the Act, as paid by the members within the year, and the total amount of grant qualified for by the several counties.

COUNTIES.	No. of Societies. 1912	Numbers of Members.	Total Amount Subscriptions.	Total Amounts Grant in Aid.
Annapolis	20	786	$1383 25	$1006 80
Antigonish	19	534	1201 00	916 36
Cape Breton	11	390	811 75	571 80
Colchester	20	732	1259 75	963 00
Cumberland	15	561	773 25	661 42
Digby	6	442	448 00	313 75
Guysboro	9	349	502 25	410 44
Halifax	4	253	275 00	200 78
Hants	11	431	734 25	544 34
Inverness	14	509	759 00	630 56
Kings	13	520	778 28	611 50
Lunenburg	16	1086	1294 50	872 07
Pictou	24	795	1317 20	1086 62
Queens	4	162	226 00	183 40
Richmond	7	130	295 00	285 32
Shelburne	3	191	207 75	151 10
Victoria	4	91	208 00	177 20
Yarmouth	5	541	782 50	413 54
	205	8503	$13256 73	$10000 00

LIST of Agricultural Societies organized under the Acts for Encouragement of Agriculture with (1) *names of principal officers*; (2) *number of members*; (3) *amount of subscriptions officially declared to in the terms of the Act as paid for* 1912;

ANNAPOLIS COUNTY.

Annapolis Royal.—President, Rev. H. Howe, Annapolis Royal; Vice-President, Robert Hardwick, Annapolis Royal; Secty-Treasurer, Geo. L. Cain, Annapolis Royal. Directors: F. Balcom, F. A. Chipman, W. A. Marshall, John Cameron, A. J. Willis, Annapolis Royal. Auditors: Arthur Harris, Robt. Jefferson, Annapolis Royal........................

Brooklyn.—President, C. A. Neily, Brooklyn; Vice-President, Leslie P. Bruce, Upper Clarence; Secy-Treasurer, C. E. Wright, Brooklyn. Directors: J. H. Neilly, Melbourne Whitman, P. F. Young, Brooklyn, N. S. J. O. Stevenson, I. J. Bruce, Upper Clarence. Auditors: G. A. Morris, Upper Clarence; Joel Whitman, Brickton...............................

Clarence.—President, Ed. M. Marshall, Clarence; Vice-President, A. P. Ramsey, Clarence; Secy-Treasurer, A. J. Wilson, Clarence. Directors: Avard Jackson, V. B. Leonard, F. W. Jackson, R. B. Fiske, Jos. W. Elliot, Clarence.........

Clementsvale.—President, Albert S. Brown, Clementsvale; Vice-President, James H. Robinson, Clementsvale; Secy-Treasurer, Chas. W. Trimper, Clementsvale. Directors: E. M. Potter, Albridge Coombs, L. C. Sproule, A. O. Potter, H. R. Trimper, Clementsvale...............................

Cleveland.—President, David G. Ritcey, Nictaux Falls; Vice-President, Colin C. Smith, Nictaux Falls; Secy-Treasurer, Archibald Feindel, Nictaux Falls. Directors, Arthur Barteaux, Malcolm Parker, Jas. M. Varner, Wesley Hoffman, Nictaux Falls.; Geo. Heatley, Nictaux South. Auditors: H. B. Willet, Nictaux, A. H. Harris, Nictaux Falls......................

Falkland Ridge.—President, Geo. Roop, Falkland Ridge; Vice-President, A. C. Roop, Falkland Ridge; Secy., C. R. Marshall, Falkland Ridge, Treasurer, W. L. Sproule, Falkland Ridge. Directors: Hiram Sproule, Percy Starrat, Edgar Mason, Hartley Marshall, Dimock Starrat, Falkland Ridge.........

and (4) *total receipts, total expenditure,* (*c*) *balance in hand,* (*d*) *deficit*; (5) *amount of grant appropriated to each society for* 1912, *subject to compliance in other respects with the requirements of the Act.*

Number of Members.	Amount Subscribed	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
31	$40 00	$40 00	$152 47	$73 50	$78 97
24	42 00	40 71	275 33	232 69	42 64
44	77 00	53 12	251 65	168 90	82 75
54	54 00	44 96	234 53	244 12	*D* 9 59
29	55 00	45 32	120 83	120 74	.09
31	60 00	47 09	110 46	88 60	21 86

Forest Glade.—President, P. D. Bent, Forest Glade; Vice-President, H. S. Carey, Stronach Mountain; Secy-Treasurer, A. D. Gates, Forest Glade. Directors: D. A. Downie, East Margaretville; Alva Thorne, Margaretville; Daniel Spencer, Forest Glade; W. H. Watkins, Forest Glade, Dimock Spidle, Forest Glade. Auditors: Ruman Baker, East Margaretville; Stephen Stronach, Stronach Mountain

Granville Centre.—President, Norman Wade, Granville Centre; Vice-President, Arnold Eaton, Granville Centre; Secy-Treasurer, Frank Troop, Granville Centre. Directors: Archie F. Troop, Clarence Eaton, John McCormick, George M. Bent, Granville Centre..............................

Laurie.—President, Geo. A. Balser, Spa Springs; Vice-President, J. S. Marshall, Spa Springs; Secy-Treasurer, A. T. Gordon, Spa Springs; Directors: F. A. Balser, J. A. Woodbury, C. W. Daniels, Spa Springs. Auditor: J. I. Spinney, Spa Springs...................................

Melvern.—President, Col. S. Spurr, Melvern Square; Vice-President, H. W. McNeill, Melvern Square; Secy-Treasurer, E. F. McNeill, Melvern Square. Directors: John P. Morse, Earl Palmer, Abner Phinney, Morris Warner, J. M. Palmer, Melvern Square. Auditors: J. P. Moore, H. W. McNeill, Melvern Square. ....

Nictaux.—President, F. M. Chipman, Nictaux West; Vice-President, G. D. Morse, Nictaux West; Secy-Treasurer, N. M. Beckwith, Middleton. Directors: F. B. Morse, Willard Ruggles H. V. Gates, Nictaux West; N. M. Beckwith, Middleton; Renforth Elliot, Nictaux West. Auditors: F. A. Chipman, W. P. Morse, Nictaux West..........................

Mount Hanley.—President, Elmer J. Elliot, Mount Hanley; Vice-President, Stanley Barteaux, Mount Hanley; Sec-Treas-A. W. Slocomb, Mount Hanley. Directors: J. W. Fritz, J. S. Miller, B. M. Armstrong, Ben Barteaux, Caleb Slocomb, Mount Hanley. Directors: John Slocomb, Douglastown; Stanley Barteaux, Mount Hanley..........................

Paradise.—President, J. S. Longley, Paradise; Vice-President, J. C. Phinney, Paradise; Secy-Treasurer, R. S. Leonard, Paradise. Directors: H. A. Longley, Paradise; J. H. Starrat, West Paradise; A. C. Freeman, J. S. Ritcey, F. W. Bishop, Paradise. Auditors: Geo. Starrat, H. A. Longley, Paradise..

Number of Members-	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
47	47 00	42 48			
21	42 00	40 71	209 47	166 01	43 46
48	97 50	60 39	278 49	258 68	19 81
31	52 00	44 26	178 00	132 64	45 36
33	82 25	54 98	308 19	29 10	279 09
36	40 00	40 00	New	Society	
77	200 00	96 74	470 02	403 91	66 11

River View.—President, Henry C. Marshall, North Williamston; Vice-President, Heber Boland, Lawrencetown; Secy-Treasurer, John Moore, North Williamston. Directors: D. M. Charlton, North Williamston; W. W. Whitman, North Williamston, Percy Banks, Brickton; Andrew C. Stevenson, R. J. Messenger, Lawrencetown. Auditors: W. E. Illsley, North Williamston, R. J. Messenger, Lawrencetown..............

Springfield.—President, Jonah Roop, Springfield; Vice-President, A. G. Morton, Springfield; Secy. Donald Morrison, Springfield; Treasurer, W. M. Durling, Springfield. Directors: Daniel Allen, C. A. Grimmer, Johnson Crease, J. G. Moore, W. L. Roope, Springfield..........................

Stoney Beach.—President, S. E. Thorne, Lower Granville: Vice-President, Herman Winchester, Stoney Beach; Secy-Treasurer, W. B. Winchester, Stoney Beach. Directors: E. D. Farnsworth, Lower Granville; Wm. Hardy, Granville Ferry; T. B. Condon, Lower Gravnille; Rupert Farnwsorth, Stoney Beach..................................

Torbrook.—President, G. W. Wheelock, Torbrook; Vice-President, J. L. Brown, Torbrook; Secy-Treasurer, A. Stanley Brown, Torbrook. Directors: H. P. Wheelock, Torbrook West; Judson Armstrong, Torbrook; James Jefferson, Torbrook; Elisha Cooney, T. E. Banks, Torbrook. Auditors: Judson Armstrong, Timothy Banks, Torbrook Mines.........

Union.—President.—R. V. Ditmars, Deep Brook; Vice-President, Garnet Harris, Bear River; Secy-Treasurer, Robt. Spurr, Deep Brook. Directors: Edwin Pinkney, Frank Ruggles Frank McClelland, Walter Purdy, Deep Brook; Ross Hersey, Clementsport. Auditors: J. C. Ditmars, J. M. Nichols, Deep Brook..................................

Williamston.—President, Harry Barteaux, Williamston: Vice-President, A. F. Morse, Williamston; Scey-Treasurer, Bolton M. Shankel, Williamston. Directors, E. C. Shaffner, Geo. Whitman, Geo. Barteaux, A. H. Bishop, W. A. Hunt, Williamston. Auditor: E. C. Shaffner, South Williamston...

Wilmot.—President, N. P. Wood, Wilmot; Vice-President, A. P. Bowlby, Wilmot; Secy-Treasurer, S. A. Patterson, Wilmot. Directors: Chas. Banks, J. Hilton, B. Harris, Milledge Best, Hallet Bowlby, Wilmot. Auditors: H. R. Pierce, J. L. VanBuskirk, Wilmot..................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
41	82 25	54 98	233 83	165 96	67 87
45	45 00	41 77	New	Society	
29	52 00	44 26	125 57	87 15	38 42
24	41 00	40 35	199 22	169 86	29 36
67	135 75	73 95	306 13	235 56	70 57
43	76 75	53 03	285 59	159 90	125 69
31	61 75	47 71	194 07	179 40	14 67

ANTIGONISH COUNTY.

Antigonish.—President, Thos. McAnnis, Antigonish; Vice-President, D. D. Chisholm, Antigonish; Secy-Treasurer, J. C. McNaughton, Antigonish. Directors: George Taylor, James Carter, W. C. Crockett, F. R. Trotter, James Thompson, Antigonish. Auditors, Roderick Chisholm, F. H. McPhie, Antigonish.....................................

Antigonish Harbour.—President, John McGililvray, Harbour Road; Vice-President, Capt. Alex McDonald, Antigonish Harbour; Secy-Treasurer, J. A. McLeod, Harbour Road. Directors: J. W. Chisholm, Harbour Road, J. P. Grant, Antigonish Harbour; Alex D. Chisholm, Dan J. McDonald, Harbour Road..

Arisaig.—President, M. D. McDonald, Arisaig; Vice-President, D. M. McDonald, Arisaig; Secy-Treasurer, L. A. Gillis, Arisaig. Directors: John J. Ross, Jos. J. Smith, D. H. McDonald, Ronald A. McDonald, A. G. McDonald, Arisaig. Auditors: Angus A. McDonald, Alex R. Gillis, Arisaig........

Beaver Meadow.—President, Alex J. McDonald, James River Sta.; Vice-President, D. R. McDonald, Addington Forks; Secy-Treasurer, John J. Chisholm, Briley's Brook. Directors: D. D. Fraser, St. Joseph; Peter McDonald, William McDonald, James River Sta.; Hugh A McDonald, Beaver Meadow; Henry P. Baxter, Addington Forks.

Clydesdale.—President, Harry Eadie, Clydesdale: Vice-President, John Chisholm, Clydesdale; Secy-Treasurer, W. J. Chisholm, Clydesdale. Directors: James Doran, Alexander McDonald, Herbert Smith, John McDonald, Norman Kirk, Clydesdale. Auditors: Herbert Smith, John A. McDonald, Clydesdale......................................

Fairmont.—President, W. J. Walsh, Fairmont; Vice-President, Dan Cameron, Fairmont; Secy-Treasurer, Alex. McPherson, Cloverville. Directors: Allan Cameron, Thomas Brophy, John A. McPherson, Fairmont; Alex. McPherson, Cloverville; Colin McNeill, Cloverville. Auditors: Dan Cameron, P. J. Hanrahan, Fairmont...........................

Number of Members.	Amount Subscribed.	Grant in Aid	Total Receipts.	Total Expenditure	Balance.
68	83 00	55 25	239 90	223 95	16 85
22	49 00	43 19	206 07	191 55	14 92
18	41 00	40 35	New	Society	
35	64 00	48 51	211 63	60 09	151 54
19	52 00	44 36	105 60	94 33	11 27
21	40 00	40 00	138 75	70 75	68 00

Fraser's Grant.—President, Simon Perro, Fraser's Grant; Vice-President, Alex. S. McDonald, Fraser's Grant; Secy-Treasurer, Alexander Fraser, Fraser's Grant. Directors: William Tate, Ronald S. McDonald, Rod. J. McDonald, Murdock Cross, Clarence Rodgers, Fraser's Grant. Auditors: Wm. J. Rodgers, John McIntyre, Fraser's Grant..................

Glassburn.—President, John J. Chisholm, Glassburn; Vice-President, John W. Chisholm, Glassburn; Secy-Treasurer, Duncan Chisholm, Glassburn. Directors: John B. McDonald, Colin McDonald, R. D. Chisholm, Alexander J. Chisholm, John R. Chisholm, Glassburn. Auditors: Angus Chisholm, Wm. McDonald, Glassburn..............................

Harbour Au Bouche.—President, John E. Corbett, Harbour Au Bouche; Vice-President, W. W. Webb, Harbour Au Bouche; Secy-Treasurer, C. S. Crispo, Harbour Au Bouche. Directors: Chas. Bouche, East Harbour Au Bouche; David Benoit, East Harbour Au Bouche; J. T. Crispo, Moses Brow, Harbour Au Bouche; Edward D. Fougere, Frankville...............

Lakevale.—President, Duncan C. McNeill, Lakevale; Vice-President, John A. McGillivray, Lakevale; Secy-Treasurer, Rev. D. Beaton, Lakevale. Directors: Dougald McDonald, Morristown; John H. Boyd, John A. Boyd, Dan Wallace, West Lakevale; Alexander J. McDonald, Lakevale. Auditors: John A. McDougall, Alexander J. McDonald, Lakevale......

Lochaber.—President, Archibald Cameron, West Lochaber; Vice-President, Garfield McDonald, Middleton; Secy-Treasurer, Patrick Wall, Head Lochaber. Directors: John Brown, West Lochaber; Jas. D. Stewart, Alex. D. Cameron, Ashdale; Dan McDonald, South Lochaber; D. R. Henderson, Copper Lake. Auditors: James D. Stewart, John A. McDonald, Middleton..

McAra's Brook.—President, Donald McDonald, McAra's Brook; Vice-President, John D. McPherson, McAra's Brook; Secy-Treasurer, Alex. B. Smith, Knoydart. Directors: Donald McDonald, John A. McDonald, John A. McPherson, John H. McEachern, McAra's Brook; Archy McDougall, Knoydart. Auditors: Colin J. McDonald, John A. McDonald, McAra's Brook......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
18	63 00	48 16	180 57	192 02	*D* 11 45
26	186 50	91 95	474 13	370 80	103 33
35	40 00	40 00	82 70	81 74	96
23	100 00	61 28	202 60	143 30	59 30
47	48 00	42 84	150 28	142 25	8 03
17	40 00	40 00	99 50	59 25	40 25

Morar.—President, Angus Brown, Livingstone's Cove; Vice-President, John Beaton; Secy-Treasurer, John A. Gillis, Morar. Directors: Jas. McDougall, Livingstone's Cove; John McMillan, Allan Adams, John McKinnon, Livingstone's Cove; Daniel McDougall, Morar; Daniel McPherson, Georgeville. Auditors: Richard Hanrahan, Morar; John McMillan, Livingston's Cove.....................................

North Grant.—President, Geo. Sutton, Clydesdale; Vice-President, John Grant, Clydesdale; Secy-Treasurer, Ronald Chisholm, Antigonish. Directors: Norman Kirk, Antigonish P. O.; John Ross, North Grant; Matthew Rodgers, North Grant; Angus McLean, Briley's Brook; Christopher Grant, Fairmont. Auditors: George Sutton, John Grant, North Grant...........

Pleasant Valley.—President, R. Smith, Pleasant Valley; Vice-President, Alex. McDonald, Pleasant Valley; Secy-Treasurer, R. McDonald, Pleasant Valley. Directors: Wm. F. Delaney, Rod. McDonald, George Baxter, Angus McGillivray, Allan McDonald, North Grant. Auditors: Rod McDonald, Pleasant Valley; Allan McDonald, North Grant.........

South River and Loch Katrine.—President, A. McLeod, Loch Katrine; Vice-President, James McNaughton, Loch Katrine; Secy-Treasurer, A. D. McPherson, Upper South River. Directors: A. S. McMillan, A. A. McDonald, A. H. McPherson, Upper South River; John A. Cameron, Loch Katrine; John H. Kennedy, Loch Katrine. Auditors: A. D. McIntosh, Loch Katrine; J. S. McMillan, Upper South River.

South River.—President, Lauchlin Gillis, South River; Vice-President, Dan J. McDonald, Fraser's Mills; Secy-Treasurer, Dan D. McGillivray, McPherson's P. O. Directors: Duncan McDonald, M. Sinclair, Angus J. McDonald, Fraser's Mills; John A. McPherson, Upper South River; Wm. McGillivray, McPherson's P. O. Auditors: Angus Cameron, McPherson's P. O., D. R. McDonald, Fraser's Mills.........

South Side Cape George.—President, John McEachern, Cape George; Vice-President, Duncan Gillis, Cape George; Secy-Treasurer, John M. McEachern, Cape George. Directors: Malcolm McEachern, Ballantyne Cove; John McGillivray, John Adams, Will McPhie, Colin McDonald, Cape George.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
30	42 00	40 71	183 26	81 29	101 97
28	45 00	41 77	197 08	167 90	29 19
20	41 00	40 35	196 45	151 41	45 04
20	57 00	46 03	173 58	171 82	*D* 1 76
27	93 50	58 97	238 82	137 30	101 52
26	40 00	40 00	87 32	90 00	*D* 2 68

West River.—President, D. J. McDonald, Purl Brook; Vice-President, Thos. Etheridge, Purl Brook; Secy-Treasurer, R. C. McGillivrya, Glen Road. Directors: John C. Fraser, Ashdale; Alexander Kirk, Alexander Kennedy, Purl Brook; D. H. Williams, West River; Frank McNaughton, Salt Springs. Auditors: Thos Etheridge, Alex. Kirk, Purl Brook...........

CAPE BRETON COUNTY.

Christmas Island.—President, A. R. McDonald, P. P. Christmas Island; Vice-President, D. J. McDougall, Christmas Island; Secy-Treasurer, Ronald McKenzie, Christmas Island. Directors: James McDougall, Christmas Island, John N. McKenzie, Christmas Island; James A. McNeill, Dan McNeill, Grand Narrows. Auditors: James McDonald, J. McNeill, Christmas Island..................................

Edwardsville.—President, G. W. Taylor, Edwardsville; Vice-President, S. R. Lewis, Edwardsville; Secy-Treasurer, James Keating, Edwardsville. Directors: John Morrison, Thos. Rudderham, Gus Gadbois, Edwardsville; Wallace Lewis, Point Edward; J. B. Lewis, Edwardsville..................

George's River.—President, E. J. Johnson, George's River; Vice-President, A. W. Gillis, George's River Station; Secy-Treasurer, A. B. McPhie, George's River Station. Directors: Wilson Gillis, John McMillan, Luke Day, Geo. H. Young, Barney Ryan, George's River. Auditors: Wilson Gillis, John McMillan, George's River..............

Homeville and Mira Bay.—President, Ronald McKeigan, Catalone Gut; Vice-President, Henry Dillon, Round Island; Secy-Treasurer, Charles Spencer, Mira Gut. Directors: Everett Spencer, Herbert Spencer, Roy Martel, Wesley Nicoll, Mira Gut. Auditors: Henry Dillon, Harold Nicoll, Mira Gut.

Little Bras d'Or.—President, L. J. Hull, Little Bras d'Or; Vice-President, C. W. W. Moffatt, Little Bras d'Or; Secretary, W. W. Johnson, Little Bras d'Or; Treasurer, J. Geo. Hull, Little Bras d'Or. Directors: Joseph O'Handley, George Howatson, Parker Rice, Andrew Ross, John McKinnon, Little Bras d'Or. Auditors: R. L. Moffat, Joseph O'Handley, Little Bras d'Or......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
34	76 00	52 77	119 25	156 13	*D* 36 88
24	48 00	42 84	130 14	98 02	32 12
22	44 00	41 42	125 89	96 90	28 99
37	51 25	43 99	216 94	204 61	12 33
15	45 00	41 77	123 89	114 70	9 19
43	53 00	44 61	140 93	135 60	5 33

Leitche's Creek.—President, R. T. McDonald, Leitche's Creek; Vice-President, I. S. Archibald Leitche's Creek; Secretary, Thos. C. Hart, Leitche's Creek; Treasurer, John R. Elliot, Leitche's Creek. Directors: John Beaton, Nelson Beaton Norman Johnson, Dan McDonald, Leitche's Creek; William Elliot, Ball's Creek..............................

Marion Bridge.—President, Alexander F. McNeill, Marion Bridge; Vice-President, Chas. Manwaring, Marion Bridge; Secretary-Treasurer, Neil Ferguson, Marion Bridge. Directors: Donald S. McKeigan, Ronald Morrison, Donald Ferguson, William Morrison Marion Bridge..........................

North Sydney.—President, John Redmond, North Sydney; Vice-President, Thos. Jackson, North Sydney; Secretary, M. J. Ingraham, North Sydney; Treasurer, A. K. Jackson, Jacksonville. Directors: Charles Munn, Upper North Sydney, H. A. Moffat, Webster Allen, John McQueen, Harry Moore, 6orth Sydney. Auditors: F. E. Jackson, North Sydney; R. M. Jackson, Jacksonville...........................

Salem Road.—President, N. J. A. McDonald, Enon; Vice-President, John A. McDonald, Lake Uist; Secy-Treasurer, A. J. McCuish, Salem Road; Directors: Alex. M. McDonald, Enon; John W. McDonald, Salem Road; Lauchie McNeil, Enon; Arcy McCuish, Enon; D. A. McKinnon, Big Glen......

South Bar.—President, A. J. McLeod, South Bar; Vice-President, Abner McLennan, South Bar; Secy-Treasurer, F. A. McInnis, Whitney Pier. Directors: A. R. Richardson, Rod McLennan, Edward Murphy, Howard Richardson, Y. H. Barrington, South Bar. Auditors: York Barrington, William Murphy, South Bar..................................

Sydney River.—President, Jacob Andrews, Coxheath; Vice-President, Murdock McKenzie, Coxheath; Secy-Treasurer, D. R. Nicholson, Coxheath. Directors: John McDonald, C. C. Collins, Daniel Ferguson, Albert Ferguson, John T. Andrews, Coxheath...

COLCHESTER COUNTY.

Agricola.—President, H. M. Smith, Otterbrook; Vice-President, Frederick Tupper; Secretary, H. C. Dunlap; Treasurer, J. W. Dunlap, Otter Brook. Directors: Hedley Creelman, C. C. Hill, Middle Stewiacke; C. B. Bentley, C. C. Cox, Upper Stewiacke.....................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
33	45 00	41 77	135 35	89 50	45 85
18	45 00	41 77	155 45	89 22	66 23
54	78 00	53 47	217 76	185 88	31 88
92	276 00	123 68	544 42	544 00	42
28	62 00	47 80	409 52	341 95	67 57
24	64 50	48 69	194 60	121 75	72 85
36	78 75	53 74	199 46	240 49	*D* 41 03

Annan.—President, Angus Murray, Tatamagouche; Vice-President, Alex. Conkey, Tatamagouche; Secy-Treasurer, H. B. Cock, Tatamaghouche, Directors: Malcolm Thompson, Central New Annan; Arthur Tucker, William Baillie, Tatamagouche Mountain; John McKay, Matthew Nelson, Tatamagouche...

Balmoral.—President, Geo. S. Baillie, Balmoral Mills; Vice-President, P. A. McDonald, Balmoral Mills; Secy-Treasurer, John Munro, Balmoral Mills. Directors: G. S. Baillie, George Hayman, H. W. McKay, Peter A. McDonald, R. D. McKay, Balmoral Mills. Auditors: G. S. Baillie, H. W. McKay, Balmoral Mills..............................

Bayhead.—President, John Johnson, Bayhead; Vice-President, W. C. Johnson, Bayhead; Secretary, J. L. Cunningham, Bayhead; Treasurer, A. S. McDonald, Bayhead. Directors: Sidney Clarke, Charles Bonyman, Geo. Dumphy, Harry Holmes, Bayhead. Auditors: John Johnson, Sidney Clarke, Bayhead....................................

Bass River.—President, J. H. Fulton, Bass River; Vice-President, Reuben Starrat, Bass River; Secy-Treasurer, S. G. Dickey, Bass River. Directors: D. H. Lank, Reuben Starrat, S. H. Fulton, Bert Densmore, Wm. Starrat, Bass River. Auditors: Reuben Starrat, E. C. Thompson, Bass River..........

Brookfield.—President, John T. Bell, Brookfield; Vice-President, Charles Whidden, Brookfield; Secy-Treasurer, Aaron Hamilton, Brookfield. Directors: Elwood McLellan, Albert Boomer, Roy Hamilton, I. W. Breton, Fred Lockhart, Brookfield......................................

Brule Shore.—President, Robt. Malcolm, Brule; Vice-President, John Fraser, Brule Shore; Secy-Treasurer, James Reid, Brule Shore. Directors: Arch Jollymore, A. P. Semple, George Dunn, Brule Shore; Alex. McKinnon, Noah Jollymore, Waldegrave. Auditors: George Dunn, Noah Jollymore, Brule Shore..

Dairy.—President, Alex. Conkey, Tatamagouche Mountain; Vice-President, Shepherd Langille, Central New Annan; Secy-Treasurer, C. J. Cock, Central New Annan. Directors: William Langille, East New Annan; Havelock McNutt, H. B. Cock, Tatamagouche Mountain; J. D. Wilson, Central New Annan, J. T. McKenzie, Central New Annan..............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
28	40 00	40 00	178 00	184 18	*D* 6 18
23	48 50	43 01	150 50	108 38	42 12
30	42 00	40 71	162 26	100 97	61 29
31	46 00	42 13	138 28	120 80	17 48
37	40 00	40 00	103 54	92 05	11 49
25	40 00	40 00	95 71	69 39	26 32
30	45 00	41 77	New	Society	

Earltown.—President, Geo. McIntosh, Earltown; Vice-President, A. A. Murry , Earltown; Secy-Treasurer, John A. Murray, Earltown. Directors: Geo. McKenzie, Geo. Taylor, W. D. McKay, R. E. McKay, Geo. McIntosh, Eartlown. Auditors: A. A. Murray, George McIntosh, Earltown........

Farmers.—President, Murdoch Currie, Londonderry Sta.; Vice-President, Robt. McKay, Londonderry Sta.; Secy-Treasurer, Harvie Grey, East Mines Sta. Directors: W. P. Weatherbee, Edward McLean, George Dill, Londonderry Sta.; William E. McLean, E. C. Fletcher, Glenholme. Auditors: W. E. McLean, East Mines Station; E. McLean, East Village......

Londonderry.—President, M. McNutt, Masstown; Vice-President, W. N. Blanchard, DeBert Sta.; Secretary, T. W. Morrison, Glenholme; Treasurer, Harvie Gray, East Mines Station. Directors: R. Wyllie, M. Corbett, Blenholme; Arthur Putnam, Fowler Fletcher, M. N. Reid, J. R. Flemming, DeBert Village...

Middleton.—President, David McLeod, Denmark; Vice-Presdient, J. W. Langille, Middleton; Secy-Treasurer, John W. Fraser, Denmark. Directors: E. G. Stevenson, Fowler P. O.; Oliver Stevenson, Arthur Bryden, J. R. Hogan, John Swan, Denmark. Auditors: R. C. Wilson, Alex. McKay, Denmark...

North River.—President, R. H. Nelson, North River; Vice-President, C. E. Blair, North River; Secy-Treasurer, William Murray, North River. Directors:C. E. Blair, William Blair, Alexander Murray, Cyrus Douglas, North River. Auditors: A. F. Fulton, A. W. Higgins, North River.............

North Earltown.—President, Wellington Ross, North Earltomn; Vice-President, Donald P. Sutherland, North Earltown: Secy.-Treasurer, Alex. W. McKay, North Earltown. Directors Rod Murray, Daniel R. McKenzie, Daniel G. Ross, John Matheson, North Earltown. Auditors: John M. Munro, North Earltown; Daniel R. McKenze, Earltown..................

Portaupique.—President, R. H. Fletcher, Portaupique; Vice-President, Samuel Creelman, Portaupique; Secy-Treasurer, H. A. Baird, Portaupique. Directors: Samuel Creelman, Austin Campbell, J. N. Brown, W. A. Lombard, W. P. Hennessy, Portaupique...................................

Number of Members.	Amount Subscribed	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
20	42 00	40 71	84 83	92 83	*D* 8 00
74	140 00	75 46	448 40	475 55	*D* 27 15
40	68 25	50 02	324 46	344 34	*D* 19 88
28	43 50	41 24	87 44	93 44	*D* 6 00
19	45 00	41 77	116 14	75 00	41 14
28	54 00	44 96	198 41	184 80	13 61
50	83 50	55 42	211 85	210 73	1 12

Springside.—President, Lyman Fulton, Newton Mills; Vice-President, Warren Johnson, Newton Mills; Secy-Treasurer, F. T. Gammell, Newton Mills. Directors: J. R. Cox, Samuel Johnson, Newton Mills; Joseph Archibald, James Creelman, Eddie Hamilton, Springside..........................

Stirling.—President, A. S. Carroll, West New Annan; Vice-President, John Warwick, West New Annan; Secy-Treasurer, Isaac Grey, West New Annan. Directors: John Grace, John Matheson, T. S. Murdock, John Johnstone, Wm. Grey, West New Annan; Auditors: Geo. Swan, Wallace Campbell, West New Annan..........................

Stewiacke.—President, Foster Campbell, Stewiacke East; Vice-President, Luther Dickie, Stewiacke; Secy-Treasurer, H. F. Ambrose, Stewiacke. Directors: Fred Fulton, W. G. Erwin, J. J. Gourley, Porter Banks, Stewiacke; Everett Campbell, Stewiacke East. Auditors: Luther Dickey, S. H. Taylor, Stewiacke..................................

Tatamagouche.,President, G. B. Clarke, Tatamagouche; Vice-President, John Bonyman, Tatamagouche; Secy-Treasurer, J. J. Clarke, Tatamagouche. Directors: Thos. Bonyman, W. Mainthorne, Tatamagouche; E. H. Langille, J. Walter Langille, French River; Daniel Donaldson, Beacon Hill. Auditors: Gordon Clarke, James Bryden, Tatamagouche.....

Waugh's River.—President, Alex. Matheson, Waugh's River; Vive-President, W. M. McKay, Waugh's River; Secy-Treasurer, J. M. McKay, Waugh's Ri ver; Directors: James W. McKay, Jas. W. Blair, Kenneth Sutherland, Jas. Sutherland, Kenneth Munro, Waugh's River. Auditors: A. W. McLeod, J. R. McKa McKay, Waugh's River..........................

CUMBERLAND COUNTY.

Amherst.—President, B. C. Gourley, Amherst; Vice- President, C. E. Shipley, Amherst; Secy-Treasurer, C. H Black, Amherst. Directors: W. W. Embree, Amherst; Joseph Bird, F. W. Thompson, Fort Lawrence; R. R. Black, Amherst; Ernest Embree, East Amherst. Auditors: Samuel Freeman, Norman Black, Amherst, N. S..........................

Beckwith.—President, S. J. Reid, Beckwith; Vice-Peesident, C. H. Angus, Carrington; Secy-Treasurer, R. D. Walker, Beckwith. Directors: R. S. Flinn, Philip Mattinson, Beckwith; Charles Ripley, Wm. Fraser, Rossendale; John Fraser, Carrington. Auditors: Vance Mattinson, Morton Eaton, Beckwith..

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
44	54 00	44 96	123 56	75 81	47 75
47	47 00	42 48	84 33	84 33	
48	162 00	83 26	324 40	203 50	120 90
66	94 25	59 24	271 54	263 23	8 31
28	46 00	42 13	98 34	89 75	8 59
170	170 00	86 10	546 43	286 50	259 93
21	41 00	40 35	127 68	146 99	*D* 19 31

East Wallace Union.—President, John Ross, Wallace Ridge; Vice-President, Wm. H. Mullins, East Wallace; Secy-Treasurer; James H. Lantz, East Wallace. Directors: Geo. A. Ross, Duncan Chambers, Jas. W. Waugh, Wallace Ridge; James H. Miller, Stephen Seamen, East Wallace. Auditors: Anson P. Waugh, Chas. Carlyle, East Wallace......................

Fox Harbour.—President, D. M. Bacon, Fox Harbour; Vice-President, Lewis Green, Fox Harbour; Secretary, James Robertson, Fox Harbour; Treasurer, Stanley Robertson, Fox Harbour. Directors: Daniel Strombert, John A .MacFarlane, Fox Harbour; Daniel McKenzie, Murray Robertson, Cape Cliff; Duncan McLanders, North Wallace. Auditors: William Oxley, Murray Robertson, Cape Cliff.....................

Lorneville.—President, B. H. Black, Amherst Shore; Vice-President, Geo. H. Oulton, Lorneville; Secy-Treasurer, C. H. Jackson, Lorneville. Directors: W. C. Embree, W. L. Low, W. H. Jackson, Lorneville; D. M. Jackson, Tidnish; Munford Oxley, Tidnish. Auditors: J. H. Jackson, James Brown, Lorneville..

Malagash.—President, R. W. Porteous, Malagash Centre; Vice-President, Walter Treen, Blue Sea Corner, Secy-Treasurer, Joseph Treen, Malagash Centre. Directors: J. B. Lombard, W. A. McKenzie, C. W. Clarke, Blue Sea Corener; Stillman Purdy, Malagash; Geo. W. Meyers, Malagash Centre. Auditors: SW. A. McKenzie, J. B. Lombard, Blue Sea Corner.....

Maple Leaf.—President, Alex McPherson, Victoria; Vice-President, W. E. Lockhart, Hansford; Secretary, H. G. Thompson, Victoria; Treasurer, A. R. McArthur, Victoria. Directors: Robt. D. Stewart, South Victoria; Archie Main, Gilbert Weeks, Birch Wood; Clarence McPherson, Victoria; Oliver N. King, Hansford. Auditors, K. J. A. Cook, John Hudson, Birch Wood

Middleboro.—President, C. A. Fountain, Upper Middleboro; Vice-President, Asa Stevens, Middleboro; Secy-Treasuerer G. G. McKim, Middleboro. Directors: Edward Howard, David Howard, Geo. Angevine, Middleboro; Herbert Crawford, Percy McKim, Hartford..........................

Minto.—President, David Bacon, Nappan Sta.; Vice-President, Alex. Smith, Nappan Sta.; Secy-Treasurer J. Wellington Lowther, Nappan Sta. Directors: James I. Stewart, Amherst Point; J. E. Harrison, Maccan; Frank L. Roach, J. McKully Pipes, Herbert Blenkhorn, Nappan. Auditors: David Bacon, F. L. Roach, Nappan Sta..................

Nuber of Memmbers.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
29	43 50	41 24	132 23	138 67	*D* 6 44
33	47 00	42 48	169 36	123 94	45 42
23	40 00	40 00			
23	42 50	40 89	172 15	144 35	27 08
21	42 00	40 71	New	Society	
50	52 00	44 26	150 32	122 25	28 07
33	40 00	40 00	110 41	119 20	*D* 8 79

Parrsboro.—President, G. H. Jeffers, Lakeland; Vice-President, E. W. Fowler, Parrsboro, Secy-Treasurer, Robie Kirkpatrick, Kirk's Hill. Directors: D. O'Regan, Lakeland; A. F. Sencabaugh, Parrsboro; H. R. Berry, New Prospect; D. W. Holmes, Cross Roads; J. E. Brown, Lakeland. Auditors: A. P. Gavin, W. K. Gilbert, Lakeland ....

Pugwash.—President, J. W. Henderson, Pugwash; Vice-President, Gordon Fullerton, Pugwash; Secy-Treasurer, D. J. Mitchell, West Pugwash. Directors: Beecher Robertson, J. H. Matheson, Harry Tuttle, Demain Fullerton, Pugwash; C. C. Colborne, West Pugwash. Auditors: Hugh Clarke, Ernest D. Mitchell, West Pugwash.................................

Shinimicas.—President, E. E. Fisher, Shinimicas Bridge; Vice-President, G. O. Smith, Shiminicas Bridge; Secy-Treasurer, J. C. Brander, Shinimicas Bridge. Directors: A. Purdy Blair, G. O. Smith, J. A. Moore, Roy Fisher, Lorne S. Fisher, Lower Shinimicas. Auditors: Robt. Blair, J. C. Black, Shinimicas..

Upper Wentworth.—President, John D. Swan, East Wentworth; Vice-President, W. W. Purdy, Wentworth Station; Secy-Treasurer, R. C. Swallow, Wentworth Centre. Directors: P. W. Tuttle, B. H. Swallow, Samuel Little, Richard Letcher, A. M. Ferguson, Wentworth. Auditors: W. A. Weatherbee, Walter Embree, Wentrwoth Station.......................

Victoria.—President, Wm. Van Buskirk, Street's Ridge; Vice-Pres. Evertt Webb, Victoria; John W. Crowley, Street's Ridge; Treasurer, David Murphy, Victora. Directors: Stanley Stewart, South Victoria; Daniel Crowley, Street's Ridge; Clarence Thompson, Victoria....................................

Wallace Grant.—President, C. McEachern, Wallace Grant; Vice-President, W. A. Reeves, South Wallace; Secy-Treasurer, A. W. Stevens, Wallace Grant. Directors: Wm. McEachern, Wallace Highlands; William McFarlane, Wallace Grant; Martin Colter, Wallace Highlands; Alex McIntosh, Wallace Grant. Auditors: C. Archibald, Garfield Colter, Wallace Grant.......

DIGBY COUNTY.

Belliveau Cove.—President, Lennie Belliveau, Belliveau Cove; Vice-President, Felix Gaudet, Weymouth; Secy-Treasurer, Antime Doucet, Belliveau Cove. Directors: Alca Belliveau, Phillipe Theriault, Emilier LeBlanc, Joseph C. Theriault, Augustin J. Theriault, Belliveau Cove.....................

Number of Members.	Amount Subscribed.	Grant in Aid	Total Receipts.	Total Expenditure	Balance.
19	41 50	40 53	123 11	31 50	91 61
27	40 50	40 18	80 93	119 14	*D* 38 21
27	40 50	40 18	215 96	77 00	138 96
35	43 75	41 33	136 08	75 05	61 03
20	42 50	40 87	133 32	83 00	50 32
30	46 50	43 23	144 78	128 65	16 13
47	48 00	42 84	202 26	124 94	77 32

Digby Central.—President, John O. Turnbull, Lighthouse Road; Vive-President, William W. DeLong, Digby; Secy-Treasurer, F. W. Nichols, Digby. Directors: James Trevoy, D. C. McKay, H. C. McNeill, Jonothan Latteney, Dibgy; Jacob Trask, Marshalltown. Auditors: D. C. McKay, Jonothan Latteney, Digby..................................

Hillsburg.—President, Carl B. Miller, Bear River; Vice-President, Byron Harris, Bear River; Secretary, C. F. McDormand, Bear River; Treasurer, H. R. Kinney, Bear River. Directors: Ezra Miller, C. D. Rice, C. McDormand, Harry E. Harris, James E. Dunn, Bear River. Auditors: C. D. Rice, C. F. McDormand, Bear River..........................

Little Brook.—President, Fred Comeau, Little Brook; Vice-President, Eddie Gaudet, Comeauville; Secy-Treasurer, Annand S. Comeau, Little Brookl Directors: Isaac H. LeBlanc, Church Point; Augustin A Comoeau, Comeauville; Siegfried Comeau, Comeauville; Rupert Cottan, A. C. LeBlanc, Little Brook. Auditors: Symphonie LeBlanc, Frank Timothe, Little Brook..

Smith's Cove.—President, A. H. Weir, Smith's Cove; Vice-President, J. W. Rice, Smith's Cove; Secy-Treasurer, Spurgeon Weir, Joggins Bridge. Directors: J. L. Sulis, E. Winchester, John Thomas, Frank Sulis, Smith's Cove; J. S. Potter, Joggins Bridge. Auditors: W. B. Sulis, J. L. Sulis, Smith's Cove ....

St. Marys.—President, Benjamin Robbins, Sandy Cove; Vice-President, James Cossaboom, Rossway; Secy-Treasurer, Edward McKay, Sandy Cove. Directors: Amasa Eldridge, T. Morehouse, Sandy Cove; Oran Waggoner, Centreville; Wm. Cossaboom, Rossway; Kenneth Dakin, Sandy Cove.........

GUYSBORO COUNTY.

Erinville.—President, Patrick Walsh, Erinville; Vice-President, Wm. O'Neil, Salmon River Lake; Secy-Treasurer, Joseph Lawlor, Erinville. Directors: Wm. Kelly, Jas. Burns, Michael Doyle, Thos. McPherson, Erinville. Robt. Burns, Salmon River Lake. Auditors: John Walsh, Wm. Kennedy, Erinville.

Goshen.—President, Andrew Sinclair, Goshen; Vice-President, James McIntosh, Goshen; Secy-Treasurer, Alex Sinclair, Goshen. Directors: James A. Sinclair, John F. Wall, John Polson, Goshen; Wm. McIntosh, John Stewart, South River Lake. Auditors A. F. McNaughton, D. McPherson, Goshen..

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
142	142 00	76 17	617 20	449 16	168 04
75	75 00	52 41	808 15	636 62	168 53
41	41 00	40 35	151 67	146 16	5 51
40	40 00	40 00	124 57	129 08	*D* 4 51
102	102 00	61 98	549 13	339 45	209 68
49	66 00	49 22	New	Society	
28	40 00	40 00	109 67	99 52	10 15

Guysboro.—President, J. A. Fulton, Guysboro; Vice- President, Wm. Whitman, Gusyboro; Secy-Treasurer, Chas. E. Jost, Guysboro. Directors: Wm. Johnson, Rochvale; Daniel Kennedy, Tompkinsville; John H. Skinner, John E. Dillon, C. H. Franchville, Guysboro........................

Glenelg.—President, David Whidden, Glenelg; Vice-President, A. D. Archibald, Glenelg; Secy-Treasurer, H. E. Stewart, Melrose. Directors: A. G. Lawson, Melrose; W. Jordan, Havelock McKeen, Herbert McLaughlin, Glenelg; G. B. McIntosh, Smithfield; Daniel Tait, Melrose...............

Intervale.—President, William G. Aikens, Intervale; Vice-President, Alex. Chisholm, North Intervale; Secy-Treasurer, Heber Keay, Guysboro Intervale. Directors: James Wall, Wm. Aikens, Daniel McDougall, North Intervale; Heber S. Ferguson, North Intervale; Wm. F. Aikens, Guysboro. Auditors: Alex Cameron, Alex. Chisholm, North Intervale........

Lakedale and Giant's Lake.—President, John J. McNeill; Vice-President, John C. McIsaac; Secy-Treasurer, Ronald McLean. Directors: Archibald McNeill, Hugh Sullivan, John A. McIsaac. Auditors: Hugh McLean, Angus D. McIsaac...

Manchester.—President, John A. McMasters, Boylston; Vice-President, D. R. O'Brien, Manchester; Secy-Treasurer, Stanley Lipsett, Manchester. Directors: Abner M. Meyers, Harry Simpson, Manchester; Parker Hart, South Manchester. Auditors: John H. Meyers, Manchester; Dan Connelly, South Manchester...............................

New Town.—President, A. T. McBain, New Town; Vice-President, Wesley McKay, Willowdale; Secy-Treasurer, John T. McBain, New Town. Directors: Martin Gunn, A. H. Sutherland, East River, St. Marys; W. H. Archibald, David N. Cameron, New Town; John G. Cameron, East River St. Marys. Auditors: James W. Cameron, Neil Gunn, New Town.

Stillwater.—President, John McKenn, Stillwater; Vice-President, H. A. McLean, Stillwater; Secretary, W. A. McDonald, Stillwater; Treasurer, A. McDonald, Stillwater. Directors: W. B. Fraser, Rod Weir, Gordon McIntosh, Miles Whidden H. A. McLean, Stillwater...........................

Number of Members-	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
90	118 00	67 66	709 62	680 86	28 76
25	42 00	40 71	156 15	149 06	7 09
41	50 00	43 54	136 73	149 75	*D* 13 02
15	46 00	42 13	New	Society	
46	58 75	46 65	138 68	122 40	16 28
27	40 00	40 00	158 64	149 10	9 54
28	41 50	40 53	112 10	54 70	57 40

HALIFAX COUNTY.

Dartmouth.—President, Maynard Tulloch, Dartmouth; Vice-President, Wallace W. Peveril, Dartmouth; Secy-Treasurer A. S. Wolfe, Dartmouth. Directors: Henry Baker, C. J. Keeler, John Moreash, Alex Innes, Dartmouth....................

Eastern Star.—President, Henry Saunders, Preston; Vice-President, Samuel Williams, Preston; Secretary, John M. Thomas, Preston. Treasurer, Geo. H. Diggs, Preston. Directors: Richard Saunders, Peter Williams, Shad Ross, Geo H. Diggs, Samuel Williams, Preston........................

Halifax.—President, John McAloney, Halifax, N. S.; Vice-President, R. H. Edwards, 78 South Park St., Halifax; Secretary, H. H. Blois, Morris St. School, Halifax; Treasurer, R. O. N. Duggan, 38 Water St., Halifax. Directors, C. W. Anderson, E. H. Blois, Wm. McKerron, J. F. Edwards, Thos. Goudge, Halifax..............................

Middle Musquodoboit.—President, Wm. H. Guild, Middle Musquodoboit; Vice-President, Wm. H. Gladwin, Middle Musquodoboit; Secy-Treasurer, Charles Logan, Middle Msuquodoboit. Directors: Samuel Crockett, R. H. Reid, Robt. McCurdy, Matthew White, Middle Musquodoboit; John H. Taylor, Chasswood. Auditors: John B. Archibald, Adam Archibald, Middle Musquodoboit.......................

HANTS COUNTY.

Avon.—President, David Withrow, Newport Landing; Vice-President, Leonard Parker, Avondale; Secretary, Edward B. Mosher, Newport Landing; Treasurer, Chas. Bennet, Newport Landing. Directors: William Wallace, Harry Brison, Belmont E. B. Mosher, Wm. Withrow, Newport Landing; John Shaw Poplar Grove..................................

Fenwick.—President, Seymore Main, East Noel; Vice-President, Richard Cameron, Minasville; Secretary, Isaac H. Densmore Burncoat; Treasurer, Milton O'Brien, Noel. Directors: Morton Faulkner, Burncoat; Sidney O'Brien, Harold O'Brien, Noel; Morris Densmore, East Noel; Hugh Main, Noel Shore.......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
40	40 00	40 00	246 75	123 95	122 80
21	42 00	40 71	147 83	80 05	67 77
134	135 00	73 69	New	Society	
58	58 00	46 38	347 35	155 00	192 35
27	70 00	50 64	251 81	200 00	51 81
41	73 50	51 88	155 21	178 84	*D* 23 39

Gore.—President, F. B. McPhee, West Gore; Vice-President, W. L. Wallace, West Gore; Secy-Treasurer, James S. Blois, Gore. Directors: Esson McDougall. M. A. Wallace, West Gore; Ansell Scott, Gore; Esrom Williams, Riverside Corner; Seymour Wallace, Gore. Auditors: Bert Wallace, H. B. McDougall, West Gore..........................

Burlington.—President, R. P. Harvey, Burlington; Vice-President, Clifford Nichols, Burlington; Secretary, Robie C. Sandford, Burlington; Treasurer, Welsford Salter, Burlington. Directors: Clarence Harvey, Fred Blackburn, Edward Sanford, Daniel Young, Chas. L. Sanford, Burlington................

Hantsport.—President, Gordon McKim, Hantsport; Vice-President, Wm. Pearson, Hantsport; Secy-Treasurer, Er. L. Gertridge, Hantsport. Directors: D. W. Murray, C. E. Tracy, Hantsport; S. P. Schurman, Roy Davis, H. P. Lynch, Mount Denson....................................

Maitland.—President, Thos. G. Smith, Maitland; Vice-President; John G. Whidden, Maitland, Secy-Treasurer, Wm. F. Roy, Maitland. Directors: John Carr, Lawson Hayes, Herbert Eaton, Capt. George Douglas, Duncan McDougall, Maitland. Auditors: Denison Smith, William McKenzie, Maitland....................................

Meander.—President, Howard Smiley, Newport; Vice-President, Wm. F. Baker, Newport; Secy-Treasurer, Andrew L. Harvey, Newport. Directors: Fred Cameron, Herbert Robinson, S. D. Dill, J. M. Harvey, Newport; Anthony Dimock, Scotch Village....................................

Progress.—President, H. Roulston, Elmsdale; Vice-President, Geo. Fraser, Elmsdale; Secy-Treasurer, Hugh Fraser, Elmsdale. Directors: Harris Dowell, Samuel Geddes, Ed. McMillan, Jacob Gilby, Elmsdale. Auditors: Hugh McMillan, Marshall Welwood, Elmsdale..........................

Scotch Village.—President, B. Anthony, Scotch Village; Vice-President, Percy Cochrane, Scotch Village; Secy-Treasurer, L. M. Smith, Scotch Village. Directors: Job Sanderson, Jas. Anthony, J. H. Walker, H. W. Dimock, Minard Nelson, Scotch Village....................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
17	42 50	40 89	159 85	35 00	124 85
21	53 50	44 79	New	Society	
66	66 00	49 22	221 62	179 56	42 06
23	52 00	44 25	199 53	100 70	98 83
22	44 00	41 42	96 82	159 27	*D* 62 45
45	57 75	46 29	189 03	116 85	72 18
17	90 00	57 73	513 04	499 08	13 96

Selmah.—President, William Sterling, Lower Selmah; Vice-President, Robt. Cox, Sterling Brook; Secy-Treasurer, Harold Fiske, Selmah. Directors: Cyrus Weldon, George McDuffie, Selmah; Osmond Sterling, Harry Densmore, Sterling Brook; A. M. Anthony, Lower Selmah. Auditors: Adam Densmore, A. M. Anthony, Lower Selmah..........................

Shubenacadie.—President, Jas. McKenzie, Shubenacadie; Vice-President, W. D. Bowers, Shubenacadie; Secretary, A. H. Snide, Shubenacadie; Treasurer, E. M. Dewis, Shubenacadie. Directors: Edwin McPhee, Watson Smith, J. A. Kirkpatrock, Harry Stewart, Thos. E. Blackburn, Shubenacadie. Auditors: W. D. Bowers, Watson Smith............................

INVERNESS COUNTY.

Black River.—President, A. D. Beaton, Glenora; Vice-President, James Beaton, Alexander; Secy-Treasurer, A. J. Campbell, Black River. Directors: Neil McKinnon, M. F. Campbell, Glenora; John Campbell, Glenora Falls...........

Cheticamp.—President, Baptiste LeForte, Point Cross P. O. Vice-President, Dennis AuCoin, Point Cross P. O.; Secretary, Pat. Cormier, Point Cross; Treasurer, Delphin Ludee, Point Cross P. O. Directors: Emilien L. Foot, John Cormier, Thos. Au Coin, Will LeFoot, Paul Desveaux, Point Cross P. O. Auditors: John AuCoin, Ephriam Chaisson, Point Cross P. O.

East Margaree.—President, A. A. Taylor, Margaree Harbour; Vice-President, J. R. LeBlanc, East Margaree; Secy-Treasurer, R. McDonald, East Margaree. Directors, Phillip J. LeBlanc, Dan. P LeBlanc, East Margaree; Lauchlin McNeill, Scotch Hill; D. J. McKinnon, Margaree Harbour...........

Glenville.—President, John A. McLellan, Glenville; Vice-President, John H. McKinnon, Strathlorne; Secy-Treasurer, J. J. McLellan, Glenville. Directors: Allen D. McLellan, D. D. McLellan, Charles J. McLean, Angus Gillis, Glenville; D. A. Campbell, Strathlorne. Auditors: Andrew McLellan, Allen McInnis, Glenville................................

Judique.—President, A. A. Beaton, Little Judique- Vice-President, J. D. McIsaac, Judique North; Secy-Treasurer, John A. McDonald, Judique, Directors: William McDonald, Campbell; Allan J. McInnis, Judique Intervale; Theo McDougall, Malcolm McEachern, Judique North; Alex Beaton, Little Judique....................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
28	51 00	43 90	157 61	119 85	37 76
34	134 00	73 33	469 34	424 25	45 09
17	40 00	40 00	135 08	100 64	34 44
20	40 00	40 00	176 41	45 00	131 41
56	83 00	55 25	181 50	221 37	*D* 39 87
23	73 00	51 70	111 30	110 42	88
32	40 00	40 00	382 06	325 42	56 64

Marble Mountain:—President, A. A. McLean, Lime Hill; Vice-President, Neil R. McKinnon, Marble Mountain; Secretary, John D. MacAskill, Marble Mountain; Treasurer, Lauchlin McKinnon, Big Harbour Dentre. Cirectors: Dr. J. F. McAulay, Dan J. Morrison, Marble Mountain; Lauchlin McLean, Dan J. McKinnon, Wm. J. McDonald, Malagawatch.

Margaree Forks.—President, John J. Coady, Margaree Forks; Vice-President, Felix Chaisson, Margaree Forks; Secretary, Duncan McDonald, Margaree Forks; Treasurer, Thos. Tompkins, Margaree Forks. Directors: Archy W. Chisholm, Charles Miller, Peter Coady, Peter McDaniel, John A. Chaisson, Margaree Forks. Auditors: A. A. Chisholm, John P. Coady, Margaree Forks...............................

Melford.—President, Alfred McPherson, Melford; Vice-President, J. C. McPhail, Melford; Secy-Treasurer, D. O'C. Doyle. Melford. Directors: A. J. Chisholm, R. D. Centre; D. J. McPhail, Phillip McAskill, Melford; John D. McLeod, John A. McPhail, Melford..........................

North East Margaree.—President, John A. Burton, North East Margaree; Vice-President, Porter J. Ingraham, North East Margaree; Secretary, Albert Ingraham, North East Margaree; Treasurer, Ralph McPherson, North East Margaree. Directors: Geo. Coady, Clement Ingraham, Simon Fraser, Alfred Lewis, A. D. Ingraham, North East Margaree. Auditors: John A. Burton, David Fraser, North East Margaree....

Port Hood.—President, Angus McIntosh, Rear Port Hood; Vice-President, Murdoch McPherson, Port Hood; Secy-Treasurer, John A. McDonnell, Port Hood. Directors: John A. Smith, John A. McDonnell, Port Hood; John A Gillis, Francis McLean, Little Mabou; John Fraser, Dunmore.............

Port Hawkesbury.—President, A. Bain, Port Hawkesbury; Vice-President, Geo. A. Forsythe, Port Hawkesbury; Secy-Treasurer, J. J. Williams, Port Hawkesbury. Directors: S. C. Chisholm, John Lamey, Alva Wheaton, Port Hawkesbury. Auditors: J. A. McIsaac, T. F. Reeves, Port Hawkesbury.....

Rossville.—President, M. H. McLeod, North East Margaree; Vice-President, Jas. J. Miller, North East Margaree; Secy-Treasurer, J. M. Smith, North East Margaree. Directors: Peter J. Coady, John J. McDaniel, Jos. J. Ross, Edward A. Ross, Patrick Munro, North East Margaree...............

Number of Members.	Amount Subscribed	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
49	54 00	44 96	113 02	107 02	6 00
29	58 00	46 38	175 15	174 49	66
30	45 00	41 77	116 95	12 00	104 95
35	43 00	41 06	120 92	94 00	26 92
40	40 00	40 00	170 93	126 00	44 93
58	72 00	51 35	188 79	144 20	44 59
21	53 00	44 61	133 76	72 00	61 76

St. Joseph.—President, Adolph J. Desveaux, Grand Etang; Vice-President, Edward P. Chaisson, Grand Etang; Secretary, John B. J. Chaisson, Friar's Head Chapel; Treasurer, Marcellin A. AuCoin, Friar's Head Chapel. Directors: David J. AuCoin, Gabriel P. Doucet, John E. Chaisson, Peter Poirier, Grand Etang; Pepier S. AuCoin, Jr., Friar's Head Chapel...........

Southwest Margaree.—President, D. D. McFarlane, Southwest Margaree; Vice-President, Allan A. McDonald, Southwest Margaree; Secretary, A. S. McDougall, Southwest Margaree; Treasurer, Angus Collins, Southwest Margaree. Directors: Rev. F. J. Chisholm, D. E. Collins, Alex H. Giles, John F. Gillis, D. J. Gillis, Southwest Margaree. Auditors: Angus A. McDonald Jas. A. McFarlane, Southwest Margaree.........

KINGS COUNTY.

Aylesford.—President, F. E. Mesiter, Auburn; Vice-President, H. E. Bowlby, Aylesford; Secy-Treasurer, J. J. Patterson, Aylesford. Directors: L. K. Patterson, George Graves, Malcolm McLean, D. F. Bowlby, F. M. Young, Aylesford. Auditors, C. S. Horsnell, Arthur Selfridge, Aylesford.............

Dalhousie East.—President, C. P. Wilson, Dalhousie East; Vice-President, James Franey Dalhousie East; Secretary, John Long, Dalhousie East; Treasurer, W. O. Wright, Dalhousie East. Directors: James Franey, William Oikle, G. A. Taylor, Dean Crouse, Robt. Wilson, Dalhousie East. Auditors: E. H. Saunders, C. P. Wilson, Dalhousie East..............

Gaspereaux.—President, N. E. Caldwell, Wallbrook; Vice-President E. L. Duncanson, Gaspereaux; Secy-Treasurer, P. J. Gertridge, Gaspereaux; Directors: A. B. Caldwell, W. S. Eagles, F. L. Gertridge, Gaspereaux; Owen Nowlin, Newtonville. Auditors: A. H. Westcott, Melanson; Albro Caldwell, Gaspereaux......................................

Harmony and South Greenwood.—President, S. T. Spinney; Kingston Sta.; Vice-President, Robt. Joudrey, South Greenwood; Secretary, D. H. Sarsfield, Kingston Sta. Directors: C. S. Spinney. Frank Cameron, Robert Joudry, Avery Banks, Harmony. Auditors: Avery Banks, Harmony; E. R. McMaster Kingston Sta...

Number of Members.	Amount Subscribed.	Grant in Aid	Total Receipts.	Total Expenditure	Balance.
63	63 00	48 16			
36	55 00	45 32	New	Society	
35	40 00	40 00	185 73	143 49	41 24
16	40 23	40 09	109 92	195 62	*D* 85 70
64	64 00	48 51	256 04	98 30	157 74
28	40 00	40 00	159 14	112 62	46 52

Highland.—President, Geo. E. Brown, North Mountain; Jas. Bennet, North Mountain, Vice-President; Secy-Treasurer, Mark Simpson, Hall's Harbour. Directors: Allen Foley, Borden Steele, Boey Porter, Clyde Bezanson, Chas. Watson, East Hall's Harbour..

Kings County.—President, Henry Chipman, M. D., Grand Pre; Vice-President, L. P. Dennison, Hortonville; Secy-Treasurer, F. H. Crane, Grand Pre. Directors: Guy P. Fuller, Grand Pre; J. E. Palmeter, J. Oscar Harris, Grand Pre; Otis Parker, Avonport; F. C. Dennison, Hortonville.............

Kingston.—President, E. L. Foster, North Kingston; Vice-President, H. J. Neily, North Kingston; Secy-Treasurer, G. S. Smith, Kingston. Directors: F. W. Foster, J. C. Welton, H. J. Neily, D. B. Smith, Fowler Forsythe, Kingston.........

Morristown.—President, W. A. Easson, Factorydale; Vice-President, A. H. Ewing, Factorydale; Secy-Treasurer, Geo. A. Roland, Aylesford. Directors: Chas. Fox, Otis Nichols, H. Ewing, Jas. Felch, Morristown; Abner Chas. Aylesford....

Scott's Bay.—President, Fred Steele, Scott's Bay; Vice-President, Oxley Steele, Scott's Bay; Secy-Treasurer, H. L. Corkum, Scott's Bay. Directors: Owne Steele, F. N. Rogers, Melbourne Corkum, Wm. Tupper, Scott's Bay. Auditors: Oxley Steele, W. H. Watson, Scott's Bay..................

South Berwick.—President, R. H. Banks, Waterville; Vice-President, B. H. Lee, Berwick; Secy-Treasurer, H. P. Banks, Waterville. Directors: H. S. Shaw, R. M. Shaw, A. Palmer, Waterville; M. Chute, S. B. Chute, Berwick. Auditors: B. H. Lee, Berwick; R. M. Shaw, Waterville.....................

Tremont.—President, Elmer Jefferson, Tremont; Vice-President, Miller Baker, Tremont; Secy-Treasurer, George O. Woodbury, Tremont. Directors: Lemuel Welton, Kingston; Ralph Saunders, Tremont; George Ward, South Tremont; John McInnis, East Torbrook; Erie Neily, South Meadowvale. Auditors: A. J. Saunders, W. E. Saunders, Tremont.........

Union.—President, C. C. H. Eaton, Canard; Vice-President, C. A. Newcombe, Church St.; Secy-Treasurer, Walter E. Eaton, Upper Canard. Directors: T. J. Borden, Robert F. Newcombe, Port Williams; Chas. Hogan, Oscar Chase, Church St.; R. Pineo, Upper Canard. Auditors: John Donaldson, M. K. Ells, Port Williams..

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
44	81 00	54 00			
81	81 00	54 54	475 32	136 80	238 52
32	84 00	55 60	152 98	188 14	*D* 35 16
25	47 80	42 76	171 60	250 28	*D* 78 68
41	72 00	51 35	215 17	139 66	75 51
52	90 25	57 82	165 81	141 01	24 80
37	40 00	40 00	178 86	215 85	*D* 36 99
40	40 00	40 00	143 48	17 03	126 45

West Cornwallis.—President, R. L. Palmer, Berwick; Vice-President, F. T. Rockwell, Berwick; Secy-Treasurer, F. A. Illsley, Somerset. Directors: A. L. Reid, R. G. Power, R. S. Spicer, I. W. Baker, A. M. Bishop, Berwick. Auditors: C. A. Magee, E. C. Bishop, Berwick........................

LUNENBURG COUNTY.

Bridgewater.—President, Peter Wile, Bridgewater; Vice-President, A. W. Hebb, Hebbville; Secy-Treasurer, James A. Curll, Bridgewater. Directors: F. Davidson, George A. Hubley, Charles Walker, Geo. B. Hebb, Bridgewater; Claude Cook, Cookville. Auditors: J. W. Margeson, William M. Duff, Bridge water...

Centreville.—President, L. J. Dunn, Union Square; Vice-President, Daniel Durland, Watford; Secy-Treasurer, J. L. DeLong, Union Square. Directors: W. W. Crandall, C. R. Grant, Barss' Corner; C. R. DeLong, Farmington; Daniel Durand, Watford; R. D. Webber, Barss' Corner. Auditors: M. B. DeLong, Union Square; E. H. Nichols, Barss' Corner........

Chester.—President, John A. Webber, Chester; Vice-President, Abner Webber, Chester; Secretary, E. D. Lordley, Chester; Treasurer, J. E. Whitford, Chester. Directors: Harry Walker, East Chester; Urban Stevens, Roy Hennigar, Chester; Wibert, Corkum, Freeman Pulsifer, Maryatt's Cove. Auditors: Cotnam Smith, Wilbert Corkum, Chester........................

Farmers.—President, Nathan Wentzell, Maplewood: Vice-President, Wallace Conrod, Maplewood; Secy-Treasurer, H. A. Rafuse, Parkdale. Directors: Wallace Conrod, H. N. Wentzell, Maplewood; Stephen Spidle, Newburn; S. B. Wentzell, G. C. Wentzell, Parkdale.................................

Lakeside.—President, J. E. Hallamore, New Cornwall; Vice-President, Alden Barkhouse, New Cornwall; Secretary, A. W. Dauphinee, New Cornwall; Treasurer, Augustus Ernst, New Cornwall. Directors: Whidden Joudrey, Esrom Spidle, Amos Dovey, Bamford Robar, Sidney Joudrey, New Cornwall. Auditors: Ephriam Naas, Hibbert Hallamore, New Cornwall..

Lewiston.—President, Henry I. Meister, Mill Road; Vice-President, Bennet Walker, New Ross; Secy-Treasurer, W. E. Hirtle, Mill Road. Directors: Wallace Russell, Harden Walker, John Brown, New Ross; James Acher, Harlen Rafuse, Mill Road Auditors: Chas Russell., New Ross; S. A. Boylan Mill Road...

Number of Members-	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
25	58 00	46 38	231 41	137 52	94 09
137	242 00	111 63	779 78	532 30	247 48
38	43 00	41 06	126 67	118 89	7 78
62	62 00	47 80	184 11	217 85	*D* 33 74
39	91 00	58 08	340 16	286 80	53 36
48	48 00	42 84	New	Society	
37	40 00	40 00	176 18	90 55	85 63

Mahone Bay.—President, H. S. Lane, Mahone; Vice-President, C. Hamilton, Mahone; Secretary, C. U. Mader, Mahone,Bay; Treasurer, John H. Mader, Mahone Bay. Directors: Simon Zwicker, Mahone Bay; Azariah Kaulback, Oakland; Timothy Lantz, John Kedy, Melrose; Geo. A. Mader, Madders Cove.................................

Maitland.—President, Chas. Barry, Barry's Corner; Vice-President, Demas Langille, Barry's Corner; Secy-Treasurer, N. W. Eichel, Barry's Corner. Directors: Artemas Joudrey, Bridgewater; Wallace Slaunwhite, Sweetland; Esrom Joudrey, Maitland Forks; Alfred Demone, Rhodes' Corner; Heman Naas, Barry's Corner. Auditors: Anthony Barry, Joseph Kaulback, Maitland Forks..........................

Malagash.—President, Adam Knickel, Heckman's Island; Vice-President, R. A. Backman, Lunenburg; Secy-Treasurer, J. H. Rhodeneizer, Lunenburg. Directors: Henry Myra, Garden Lots; Rufus Beck, Centre Range; Robert Schwartz, Lunenburg; Horban Conrad, Lr. Peninsula, Lunenburg Co., Allan Schnare North West...............................

Midville Branch.—President, Howard Wentzell, Midville; Vice-President, James Snyder, Midville; Secretary, Fletcher Hirtle, Midville; Treasurer, Albert Snyder, Midville. Directors: Howard Wentzell, David Wagner, Otto Mailman, Albert Arnberg Harvey Mailman Midville. Auditors: Archibald Hebb, Banford Snyde, Midville..........................

New Ross.—President, J. S. Murphy, New Ross; Vice-President, H. A. Mesiter, New Ross; Secy-Treasurer, W. Edwin Larder, New Ross. Directors: D. N. Tunrer, J. R. Mesiter, E. M. Boylan, Patrick Boylan, New Ross. Auditors: Edward Skerry, A. M Ross, New Ross..........................

Oak Hill.--President, H. A. Silver, Oak Hill; Vice-President, Whitford Ernst; Secy-Treasurer, Owen G. Dauhpinee, Bridgewater. Directors: Chas Wile, Timothy Wynot, Clifford Chesley Edward Rodenheizer, Amos Langille. Auditors: Albert Westhaver, Arthur Miller.................................

Riverside.—President, J. F. Penny, New Germany; Vice-President, Austin Tretheney, Ne wGermany; Secy-Treasurer, Horton Chesley, New Germany. Directors: Hilk Conrod, Rupert Verner, Dan Morton, Ainsley Arnburg, Chas. Power, New Germany. Auditors: John Veinot, A. H. Woodworth, New Germany...................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance
172	136 00	74 04	590 43	194 95	395 48
57	60 00	47 09	132 95	111 80	21 15
203	212 00	100 99	425 10	415 30	9 80
53	53 00	44 61	172 93	173 19	*D* 26
60	64 50	48 69	270 54	258 96	11 58
48	52 00	44 26	134 78	137 75	*D* 2 97
56	60 00	47 09	126 21	125 25	96

Union.—President, Joseph Simspon, Simpson Corner; Vice-President, Casper Hirtle, Hemford; Secy-Treasurer, Herbert Silver, Hemford. Directors: Arthur Lohnes, Joseph Smith, Vulcan Silver, Arch Snider, Hemford; John Simpson, Simpson Corner..

West Northfield.—President, Albert Rodeneizer, West North field; Vice-President, Harvey Meismer, West Northfield; Secy-Treasurer, John Langille, West Northfield. Directors: Ludim Feener, Wallace Rhodoneizer, Harvey Meismer, Albert Feener, Wentzell's Lake. Auditors: Howard Wentzell, S. M. Ramee, West Northfield......................................

Upper Northfield.—President, Geo. Fancey, Upper Northfield; Vice-President, Henry Eikle, Upper Northfield; Secy. Harry McKay, Upper Northfield; Treasurer, Joseph McKay, Upper Northfield. Directors: Lemuel Pennie, Benjamin Wagner, Northfield; Asaph McKay, Abed Veniot, Henry Eikle, Upper Northfield......................................

PICTOU COUNTY.

Big Island.—President, John McLean, Big Island; Vice-President, Owen Cameron, Big Island; Secy-Treasurer, A. J. Chisholm, Big Island. Directors: Daniel McLean, Lauchie McLean, George McGregor, James F. McDonald, Wm. McGregor, Big Island. Auditors: Daniel McLean, William McGregor, Big Island......................................

East River.—President, Jas. H. Grant, Springville; Vice-President, Duncan Cameron, Bridgeville; Secy-Treasurer, Sinclair Cameron, Bridgeville. Directors: Alexander McDonald. Springville; Joseph Delaney, Island; Rod Chishom, Bridgeville; Jas. A. McLean, John G. McIntosh, Island. Auditors: A. C. Cameron, Joseph H. Grant, Springville..............

Egerton.—President, Charles Mattheson, Hopewell; Vice-President, Samuel McKay, Hopewell; Secretary, H. D. McLeod, Hopewell. Directors: Samuel McKay, Stellarton; Finlay Gray, Aubrey McKay, Chas. Matheson, Geo. W. McLean, Hopewell. Auditor: Finlay Gray, Hopewell..........................

Little Harbour.—President, Alex. Reid, Little Harbour; Vice-President, D. A. McQueen, King's Head; Secy-Treasurer, Alexander McQueen, King's Head. Directors: James J. Chisholm, Anderson's Mountain; John C. Reid, Little Harbour; Dan H. Cameron, Chance Harbour; Robie D. Grant, Robt. McQueen, King's Head. Auditors: John D. Grant, D. P, McDonald, King's Head..............................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
43	47 00	42 48	149 34	84 95	64 39
43	43 00	41 06	130 54	95 00	35 54
40	41 00	40 35	205 77	181 90	23 87
17	41 50	40 53	80 00	62 13	17 87
31	40 00	40 00	218 67	190 18	28 49
18	70 00	50 64	114 74	49 45	65 29
23	46 00	42 14	125 95	106 65	19 30

Lyon's Brook.—President, J. E. Grant, Lyon's Brook; Vice-President, C. D. Gammon, Lyon's Brook; Secy-Treasurer, G. William Grant, Lyon's Brook. Directors: A. D. McKay, Pictou; Peter McInnis, Charles Sobey, Lyon's Brook; Robert Fullerton, Finlay McIntosh, Pictou......................

Marshville.—President, H. M. Tattrie, Marshville; Vice-President, Robt. Murray, Marshville; Secy-Treasurer, C. M. Langille, Marshville. Directors: A. B. Langille, Cyrus Langille, Jas. I. Langille, Rod McDonald, Robt. Murray, Marshville. Auditors: J. B. Langille, Hope W. Langille, Marshville.......

Meadowville.—President, Jas. B. McDonald, Meadowville, Vice-President, J. D. McConnell, Meadowivlle; Secy-Treasurer, Jas. W. McBain, Meadowville. Directors: Henry Sutherland, Royal Centre; J. W. Murray, Royal Centre; James Cotter, A. R. McConnell, Meadowville...........................

Merigomish.—President, Renwick Forbes, Merigomish; Vice-President, William Craigie, Merigomish; Secy-Treasurer, David Finlayson, Merigomish. Directors: John Dunn, Samuel Cameron, George Roy, Merigomish; W. B. McDonald, West Merigomish, T. B. Olding, Merigomish.....................

Mill Brook.—.resident, D. A. McKenzie, New Gairloch; Vice-President, Wm. McDonald, Mill Brook; Secretary, A. J. McIntosh, Mill Brook; Treasurer, Sam Gordon, Mill Brook. Directors: John L. Munro, William H. Fraser, John K. Fraser, Wm. S. Fraser, Mill Brook; Alexander, McKenzie, Gairloch..

Mount Thom.—President, David Cameron, Mount Thom; Vice-President, Chas. Fraser, Mount Thom; Secy-Treasurer, W. C. Proudfoot, Salt Springs. Directors: Charles Maxwell, W. D. McDonald, D. R. Fraser, Heber McLean, J. D. Sinclair, Mount Thom. Auditors: D. D. Cameron, Mount Thom; W. D. Maxwell, Mount Thom.........................

New Glasgow.—President, J. C. Warren, Fraser New Glasgow; Vice-President, J. W. McDougall, Landsdowne; Secy-Treasurer, P. MacFarlane, New Glasgow. Directors: James R. Fraser, John R. McMillan, Edgar E. Harrow, Edwin A. Fraser, New Glasgow. Auditors: C. F. Bent, Don F. McKenzie, New Glasgow...........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
19	55 00	45 32	282 10	240 65	41 45
17	50 00	43 55	New	Society	
24	45 00	41 77	134 28	43 00	91 28
31	40 00	40 00	161 03	134 70	26 33
39	69 00	50 28	293 33	173 00	120 33
21	49 20	43 26	151 29	100 25	51 04
65	69 00	50 28	396 78	161 75	235 03

New Lairg.—President, William P. Grant, Landsdowne; Vice-President, J. W. Murray, Landsdowne; Secretary, Jas. Douglas, Concord; Treasurer, W. H. Robertson, Concord. Directors: Alexander F. Murray, Concord; Geo. Murray, Alex McLeod, Daniel Graham, K. A. McLeod, Landsdowne. Auditors: Robert G. McLeod, Landsdowne; Jas. McCoul, Concord..

Pictou.—President, Edward Harris, Haliburton Stream; Vice-President, R. D. Ross, Bayview; Secy-Treasurer, D. Logan, Pictou. Dierctors: Hugh Sutherland, Mercer Murray, Pictou; A. McG. Fraser, Central Caribou; John McKiel, Bayview; Fletcher Morrison, Waterside........................

Pine Tree.—President, J. C. Simonds, Pine Tree; Vice-President, Wm. Reid, Sutherland River; Secy-Treasurer, William Roy, Linacy. Directors: U. W. Hirtle, D. H. Burns, D. Robertson, Sutherland River; Thos. Beveridge, Robt. Rae, Pine Tree. Auditors: D. H. Burns, J. Beveridge, Pine Tree..

River John.—President, J. R. Collie, River John; Vice-President, H. H. Sellers; Secy-Treasurer, William McGregor, River John. Directors: H. M. Tattrie, James Sellers, John Murphy, River John; John Sutherland, Sea Foam; D. F. Langille, Louisville..................................

Rocklin.—President, Geo. McLeod, Burnside; Vice-President, George T. Kerr, Burnside; Secy-Treasurer, Earnest Fraser, Rocklin. Directors: Andrew McPherson, Daniel Balfour, Rocklin; John T. Kerr, John G. Sutherland, Burnside; Wm. Jardine, White Hall. Auditors: John T. Kerr, Burnside; Wm. Matheson, Burnside............................

Rogers Hill.—President, John Stewart, Cross Roads, Rogers Hill; Vice-President, J. J. R. Matheson, Cross Roads, Rogers Hill; Secy-Treasurer, W. S. McKean, Cross Roads, Rogers, Hill. Directors: Geo. R. Matheson, John W. Fraser, Scotsburn; Albert Graham, Watson McKean, Rogers Hill Centre; Alfred Creighton, Cross Roads, Rogers Hill. Auditors: John A. McKean, Albert Graham, Rogers Hill Centre............

Seaview.—President, Dan R. McGillivray, Dunmaglass; Vice-President, Ronald H. McGillivray; Secy-Treasurer, Daniel R. McKinnon, Ardness. Directors: Roderick C. McDonald, Angus McEachern, Ardness; Ronald A. McGillivray, Dunmaglass. Auditor: A. J. McGillivray, Dunmaglass.............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
22	44 00	41 42	89 41	97 16	*D* 7 75
158	158 00	81 84	2229 75	2078 31	151 44
25	41 00	40 35	120 29	40 50	79 79
55	55 00	45 32	198 25	221 91	*D* 23 66
15	40 00	40 00	84 35	89 07	*D* 4 72
26	51 00	43 90	178 92	108 60	70 32
17	42 50	40 88	92 42	114 95	*D* 22 53

Salt Springs.—President, R. A. Robertson, Stillman; Vice-President, K. A. Murray, Salt Springs; Secy-Treasurer, Gordon A. Proudfoot, Salt Springs. Directors: J. R. Young, D. R. Robertson, Fred Satchell, R. Benvie, Tom Muirhead, Salt Springs..

Scotsburn.—President, R. T. Stewart, Scotsburn Station;? Vice-President, A. G. Stewart, Scotsburn; Secy-Treasurer, Peter Fraser, Heathbell. Directors: P. J. Stewart, D. W. Murray, Hugh McLeod, Hugh Langille, Scotsburn; H. J. McLeod, Scotsburn. Auditors: D. W. Murray, Scotsburn; Allie McKay, Heathbell......................................

Toney River.—President, J. B. Paige, Toney Mills; Vice-President, J. A. Colquhoun, Toney River; Secy-Treasurer, Daniel A. McKenzie, Toney River Directors: Angus C. Grant, Toney River; Daniel A. McDonald, John D. Mnuro; D. D. McKenzie, Toney Mills; Angus L. Henderson, Toney River. Auditors: George McConnell, David Turner, Toney River...

Union Centre.—President, John Murray, Whitehill; Vice-President, G. Munro, Union Centre; Secretary, Alex Ross, Box 838, Westville; Treasurer, Duncan Fraser, Union Centre. Directors: Geoge Ross, Charles Munro, William Gray, Robt. Wallace, Wm. Harris, Union Centre. Auditors: Bert Sinclair, Wm. McDonald, Union Centre........................

Westville.—President, Rod Martin, Westville; Vice-President, Geo. Oliver, Westville ; Secretary, W. K. McKenzie, Westville; Treasurer, Alfred McLeod. Directors: J. F. McQuarrie, Geo. Oliver, M. McLeod, Westville. Auditors: J. K. McKenzie, Westville.................................

West River.—President, F. W. Smith, Durham; Vice-President, Geo. Brownrigg, West River Centre; Secy-Treasurer, Geo. I. Stewart, West River. Directors: Wm. McLean, George Smith, Aubrey Clarke, John Proudfoot, Geo. Brownrigg, West River. Auditors: Stewart McLellan, Durham; Geo. Brownrigg, West River Central.....................

QUEENS COUNTY.

Kempt.—President, W. P. Freeman, New Grafton; Vice-President, Maurice Freeman, Kempt; Secy-Treasurer, Fred Kempton, Kempt. Directors: Ernest Kempton, Spurgeon DeLong, Leonard Hunt, Kempt; William Freeman, Wesley White, Maitland. Auditors: Geo. DeLong, John Dukeshier..

Number of Members.	Amount Subscribed.	Grant in Aid	Total Receipts.	Total Expenditure	Balance.
23	46 00	42 13	149 62	112 78	36 84
32	60 00	47 09	124 11	106 25	17 86
25	50 00	43 55	85 65	37 83	47 82
19	40 00	40 00	91 31	68 69	22 62
58	59 00	46 74	99 39	175 15	*D* 75 76
15	56 00	45 67	182 56	113 00	69 56
57	64 00	48 51	266 51	83 00	183 51

Mutual Benefit.—President, Sylvanus Wile, South Brookfield; Vice-President, Judson Christopher, North Brookfield; Secy-Treasurer, J. F. McLannan, North Brookfield. Directors: Cleighton Harlow, M. W. Frank, H. L. Dailey, Henry Silver, North Brookfield; M. F. Colph, Pleasant River. Auditors: M. A. Harlow, H. I. Dailey, North Brookfield...............

North Queens.—President, G. A. Rafuse, Caledoina; Vice-President, E. B. Smith; Caledonia; Secy-Treasurer, B. L. Telfer, Caledonia. Directors: Wilson Baxter, Zoeth Minard, J. W. Douglas, Melbourne Kempton, H. S. Annis, Caledonia..

South Brookfiled.—President, Richard Hunt, Brookfield; Vice-President, Herbert Spidle, South Brookfield; Secy-Treasurer, Josiah Smith, South Brookfield. Directors: W. L. Freeman, J. W. Smith, L. A. Croaker, Charles Spears, John Bushel, South Brookfield. Auditors: A. W. Freeman, Raymond Neily, South Brookfield..............................

RICHMOND COUNTY.

Arichat.—President, Hon. Isadore LeBlanc, Arichat; Vice-President, Reynolds Smith, Arichat; Secretary-Treasurer, James D. Power, Arichat. Directors: John Tyrell, Melville Barett, H. B. McNeill, D. H. Campbell, Phillip Edwards, Arichat. Auditors: D. H. Campbell, John Tyrell, Arichat............

Grand River.—President, Neil McCuspic, Grand River, Vice-President, Douglas Kemp, L'Archeveque; Secy-Treasurer, Alex G. McKay, Grand River. Directors: Dan A. Matheson, R. C. Matheson, Alex D. McKay, John F. McKay, Archibald McBeth, Grand River. Auditors: Dan J. Matheson, John F. Matheson, Grand River..............................

Grantville.—President, Dan J. McCormick, Grantville; Vice-President, Chas. H. McIntyre, McIntyre's Lake; Secy-Treasurer, Frederick W. Grant, Grantville. Directors: Dan J. Oliver, Lower River Inhabitants; William J. Proctor, Lower River Inhabitants; Matthew LeLacheur, John D. McCormick, Chas. W. Grant, Grantville. Auditors: Wm. Proctor, Lower River Inhabitants, Duncan McIntyre, McIntyre's Lake......

Loch Lomond.—President, Angus A. Morrison, Loch Lomond West; Vice-President, Rory D. Morrison, Head Loch Lomond; Secy-Treasurer, Dan A. McLeod, Lcoh Side. Directors: Dan N. Morrison, Drummondville; James McDonald, Allan McCuish, Loch Side; Murdoch McLeod, Loch Lomond West; John McLeod, Head Loch Lomond......................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
29	40 00	40 00	138 06	138 06	
32	57 00	46 03	99 00	159 30	*D* 60 30
44	65 00	48 86	120 63	155 37	34 74
40	40 00	40 00	80 00	135 32	*D* 55 32
20	40 00	40 00	266 46	200 99	66 37
26	40 00	40 00	108 11	71 55	36 56
20	40 00	40 00	115 94	65 06	50 88

Mount Auburn.—President, N. D. Morrison, Loch Lomond West; Vice-President, Malcolm Shaw, Mount Auburn; Secy-Treasurer, W. A. McDonald, Mount Auburn. Directors: Jas. E. Holmes, A. D. McDonald, D. J. McDonald, Mount Auburn. W. J. McLeod, Loch Lomond, West..............

West Bay.—President, Peter Dumphy, St. George's Channel Vice-President, Duncan J. McRae, St. George's Channel; Secy., Frank C. Cotton, St. George's Channel; Treasurer, Peter Dumphy, St. George's Channel. Directors: William Campbell, Points' West Bay; Benj. McKenzie, Wm. H. Ross, St. George's Channel; John A. Smith, Dundee. Auditors: Murdock McInnis, John D. McRae, St. George's Channel....

Soldiers' Cove.—President, R. L. McDonald, Soldiers' Cove; Vice-President, J. J. McDonalad, Soldiers' Cove; Sec-Treasurer, Stephen T. Thomas, Soldiers' Cove. Directors: Allan H. McDonald, Dan J. McDonald, Wm. Sutherland, John F. Gillis, John A. McNeill. Soldiers' Cove. Auditors: Peter McKenzie, Martin Gillis, Soldiers' Cove..............

SHELBURNE COUNTY.

Barrington Passage—President, D. Sargent, Barrington Passage; Vice-President, T. W. Robertson, Barrington Passage; Secretary-Treas., F. W. Sargent, Crowell P. O. Directors: J. H. Christie, J. R. Gammon, Geo. W. Smith, Barrington Passage; W. L. Smith, Gilbert Crowell, Crowell P. O. Auditors: D. Sargent, Geo. W. Smith, Barrington Passage............

Granite.—President, T. D. Swain, Barrington; Vice-President, Kennth Coffin, Coffin's Crofft; Secretary, T. W. Watson, Barrington; Treasurer, Joseph A. Hipson, Barrington. Directors: Howard Daone, James McMillan, Jacob I. Nickerson, Henry A. Watson, Ashton Crowell, Barrington; Henry Smith, Barrington West. Auditors: Henry Watson, Howard Doane, Barrington.......................................

Shelburne.,President. L. O. Fuller, Shelburne; Vice-President, Howard A. Harris, Welshtown; Secy-Treasurer, H. H. West, Shelburne. Directors: Lorenzo Jones, Upper Ohio; Henry W. Bower, Lower Ohio; W. I. Farquhar, E. L. Bower, Shelburne; Wm. E. Holden, Jordan Branch. Auditors: F. C. Blanchard, John Hood, Shelburne.........................

Number of Members.	Amount Subscribed	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
20	40 00	40 00	105 10	54 40	50 70
24	40 00	40 00	161 99	128 05	33 94
20	55 00	45 32	New	Society	
53	69 75	50 55	129 67	107 00	22 67
68	68 00	49 93	180 40	172 96	7 44
70	70 00	60 63	665 24	666 55	*D* 1 31

VICTORIA COUNTY.

Baddeck Bridge.—President, D. F. McRae, Baddeck Bridge; Vice-President, A. D. McCharles, Baddeck Bridge; Secy-Treasurer, W. G. McRae, Baddeck Bridge. Directors: Duncan McRae, F. A. McRae, Nyanza; C. R. McRae, Baddeck Bridge; W. W. Nicholson, S. S. Baddeck; A. J. Cain, Baddeck River. Auditors: Angus McInnis, S. S. Baddeck; Alex J. McKay, Baddeck Bridge..........................

Baddeck Valley.—President, Jas. T. Keely, Baddeck Forks; Vice-President, John Buchanan, Baddeck Forks; Secy-Treasurer, Murdock R. McLeod, Baddeck Bridge. Directors: E. P. Rice, F. Buchanan, Dan McKenzie, Baddeck Forks; Albert Crowdis, Baddeck Bridge; Alex McAulay, McAulay's P. O. Auditors: Alexander Aderson, S. S. Baddeck, J. H. McIvor, Baddeck Bridge..............................

Lake View.—President, Jas. C. McDonald, Baddeck; Vice-President, Henry Crowdis, Baddeck; Secy-Treasurer, John E. Campbell, Baddeck. Directors: Geo. R. Anderson, Alexander McPherson, Jas. D. Dunlap, A. S. McDonald, A. Y. McDonald. Baddeck. Auditors: G. F. McRae, A. S. McDonald, Baddeck,

Middle Ri ver.—President, Forbrs McDonald, Upper Middle River; Vice-President, Dan McDermid, Lower Middle River;? Secy-Treasurer, D. M. McLennan, Upper Middle River. Dire ctors: Kenneth Finlayson, Roxy McLeod, John A. McDonald, Rory McRae, Upper Middle River. Alfred McLeod Middle River...................................

YARMOUTH COUNTY.

Brookside.—President, John Smith, East Pubnico; Vice-President, Rupert Larkin; Secy-Treasurer, Charles Wyman, East Pubnico. Directors: George Fox, Allister Hughes, Isaac Goodwin, Elizah Nickerson, Eben Nickerson, East Pubnico. Auditors: Chas. Rudolph, Loran Smith, John Larkin, East Pubnico......................................

Kemptville.—President, Harry C. Prosser, Kemptville; Vice-President, Capt. S. J. Hatfield, Kemptville; Secy-Treasurer W. S. Smith, Kemptville. Directors: A. M. Gates, Edward Hurlburt, James Wood, Merton Roberts, Jonathan Randall, Kemptville..................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
25	88 00	57 02	New	Society	
20	40 00	40 00	117 01	168 05	*D* 51 04
20	40 00	40 00	159 87	77 00	82 87
26	40 00	40 00	140 33	126 10	14 23
43	43 00	41 06	200 28	119 43	89 85
23	40 00	40 00	New	Society	

Yarmouth Centrall—President, Emory E. Porter, Pleasant Valley; Vice-President, S. F. Killam, Pleasant Valley; Secy-Treasurer, Geo. C. Killam, Pleasant Valley. Directors: Lemuel A. Crosby, J. A. Sanders, A. T. Whitehouse, Deerfield; Lemuel E. Crosby, South Deerfield; Fred Whitehouse, Pleasant Valley.

Yarmouth County.—President, R. Caie, Yarmouth; Vice-President, S. A. Cook, Chebogue; Secy-Treasurer, Wm. Corning, Yarmouth. Directors: James A. Rose, J. L. Lovitt, Yarmouth, J. F. Palmer, Dayton; J. M. Porter, Deerfield; A. B. Brown, Yarmouth. Auditors: W. M. Keelly, W. A. Godfry, Yarmouth.

Yarmouth Township.—President, Moses Harris, Hebron; Vice-President, John McCormick, Wellington; Secretary, W. A. Churchill, Lakeside; Treasurer, Asa Porter, Hebron. Directors: I. McCormick, Wellington; H. Patten, Wellington; Thomas Moses, Charles Porter, H. Hilyard, Hebron.................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
35	40 00	40 00	136 04	50 74	85 30
393	612 50	250 00	5097 81	3847 22	1250 59
47	47 00	42 48	198 96	100 00	98 96

REPORT OF THE STANDING FIELD CROPS COMPETITION FOR 1912.

After several years of slow progress, Field Crops Competitions are now an important item in our Agricultural affairs. The fact that home grown seed is superior to imported seed has been forcing itself on farmers for a number of years. In fact, the persistent efforts of a few interested farmers and their co-9peration with the officials in charge of this branch of agriculture has steadily born fruit until today the words Inspected, Hand-Selected and Registered Seeds, are words with a meaning over the length and breadth of the Maririme Provinces.

This has been brought about by Government aid to "Seed Fairs," "Standing Field Crops Competitions," more attention to seed exhibits at County Exhibitions, Expert Judges and impartial awards in all competitions and by many other more or less obscure means.

In faithful inspection, in untiring energy in inducing selections, and in unselfish efforts in assisting in the distribution of good seeds, the "Seed Inspector" for the Maritime Provinces has done much to place this important Branch of Agriculture in its rightful position.

Having learned that we can grow just as good seed as we can buy, (while justifying all the labor and expense incurred) does not appear to be the ultimate end of our efforts. During the past few years quite large quantities of seed grains from the Maritime Provinces have gone to other parts of the Dominion ahd have given good results.

Nor is that all; at the present time an expert from one of the leading Agricultural Colleges who spent some time last year in assisting us in judging Field Crops, is looking for one thousand bushels of pure "Banner" oats to send to Sweden for seed.

Last year we called attention to the fact that a former Nova Scotian now residing in New York had offered liberal prizes for the best acre of turnips grown by a boy between 15 and 20 years. The Competition for these prizes was very keen and the result most interesting and instructive.

This gentleman was so pleased with the results that he has again consented to offer an equal amount under the same conditions.

The Provincial Government offered 10 prizes for the best half-acre of potatoes open to the Province. In connection with Field Crops Competitions, the Dominion Exhibition held at Ottawa offered liberal prizes for 1½ bushels potatoes from prize winning fields open to Canada. Three entires were made from Nova Scotia Fields and notwithstanding the early date of the Show (Sept. 5th) a second and third prize were secured. This should be pretty good evidence that Nova Scotia can produce good potatoes.

A definite program of the Field Crops Competitions for 1913 has not been yet arranged. It is safe to assume, however, that it will be equal to last year. Probably more comprehensive.

On the following pages will be found the names of the Conpetitors and the scores made in the several Competitions.

Respectfully submitted.

F. L. FULLER.

COUNTIES	Amount Offered	Size of Plot for Oats	Size of Plot for Wheat
Antigonish and Pictou......	$75.00 or more	3 acres	2 acres
Cumberland, Colchester, Hants, Kings, Annapolis..	$60.00 "	3 "	2 "
Halifax....................	$55.00 "	2 "	1 "
Cape Breton, Richmond, Inverness, Victoria, Guysboro....................	45.00 "	2 "	1 "
Lunenburg, Queens, Shelburne, Digby, Yarmouth			

OATS.

Antigonish County.

John C. Chisholm	Lower South River	98¼	1st
Taylor Bros	Antigonish	96¾	2nd
Colin F. Ross	Maryville	96¼	3rd
John McDonald	Maryville	95½	4th
Dan J. McDonald	South Lochaber	94¾	5th
John J. Inglis	North Lochaber	94	6th
Ronald A. Boyd	Morristown	93½	7th
Ronald Chisholm	Antigonish	93	8th
Colin McAdam	West River	92½	0th
Crockett Bros	Antigonish	92¾	9th
Jas. J. Dunn	Lower South River	901	11th
D. C. McNeill	Brophys	90½	12th
E. H. Jocelyn	Antigonish	90¼	
Alex. H. McPherson	Upper South River	90¼	
Mrs. Allen J. Ross	North Grant	89¾	
H. H. Crearer	Antigonish Harbour	88½	
Alex. C. Chisholm	North Grant	87¼	
Alex McPherson	Cloverville	87¼	
Cameron Chisholm	West River	87¼	
Harry Eadie	Clydesdale	86¾	
Jas. Thompson	Cloverville	83¾	
Donald McDonald	Arisaig	82½	

Judge:—Harry R. Brown, Wallace Bay, N. S.

Colchester County.

J. R. Semple	Brule	87½	1st
J. L. Cunningham	Bayhead	95½	2nd
R. H. McKay	Balmoral Mills	90	3rd
D. E. Stephenson	Brule Shore	89½	4th
H. F. Ambrose	Stewiacke	89	5th
Wilmot L. Fulton	Lower Stewiacke	88½	
John W. Murray	East Earltown	88	

Judge:—W. G. Oulton, Lorneville, N. S.

Cumberland County.

Stanley A. Logan	Amherst Point	96	1st
Chas. Logan	Amherst Point	94½	2nd
Laurie McFarlane	Fox Harbour	93½	3rd
Robt. McDonald	Lower Maccan	93½	4th
Fowler Bros	Amherst Point	93	5th
J. R. Harrison	Maccan	89¾	6th

W. W. Embree	Amherst	89	
A. M. McLean	Upper Gulf Shore	85¼	
Geo. Christie	River Hebert	82¾	
Will Keillor	Amherst Point	82½	
DeMille Forrest	Amherst Point	80	

Judge:—Lionel Stevenson, Agricultural College, Truro.

Halifax County.

Robt. Kaulback	Middle Musqudoboit	94	1st
Robt. McCurdy	Middle Msuqudoboit	88¾	2nd
P. G. Archibald	Centre Musquodoboit	87¾	3rd
John D. Ogilvie	Little River	86¾	4th
A. D. Burris	Upper Musquodoboit	86¾	5th
Chas. Logan	Middle Musquodoboit	86½	
Joseph Bruce	Middle Musquodoboit	83¾	

Judge:—B. H. Landels, Agricultural College, Truro.

Inverness County.

A. J. Campbell	Black River	96	1st
A. T. Beaton	Brook Village	95	2nd
Ronald McIsaac	Dunvegan	92½	3rd
Angus Campbell	Glenora Falls	92	4th
Patrick J. Chisholm	Margaree Forks	90½	5th
Alfred A. Taylor	Margaree Harbour	90¼	6th
Angus R. McDonald	Broad Cove Chapel	89½	7th
J. G. Beaton	Black River	89½	8th
John A. McLellan	Glenville	89½	9th
J. J. McLellan	Glenville	88¼	
D. J. McLellan	Dunvegan	88	
L. L. McNeill	Scotch Hill	87	
Allan D. McLellan	Glenville	86¾	
John McLeod	Dunvegan	84½	
Angus A. Gillis	Glenville	83½	
Andrew McLellan	Glenville		
W. L. Dawson	Glenville		

Judge:—S. J. Moore, Seed Inspector, Truro.

Lunenburg County.

H. G. Hebb	Bridgewater	90½	1st
Abner Webber	Chester	87¾	2nd
Willis Fancey	Bridgewater	85½	3rd
Jos. Fancey	Bridgewater	84	4th
Wallace Rodeneizer	Bridgewater	81½	

Judge:—F. L. Fuller, Agricultural College, Truro.

Richmond County.

Wm. Kemp	L'Archeveque	96¾	1st
A. G. McKay	Grand River	93¼	2nd
D. A. McLeod	Loch Side	93	3rd
Phillip C. McAulay	Grand River	92	4th
D. J. McDairmid	Mount Auburn	91¾	5th
Arch C. McBeath	Grand River	90¼	6th
Wm. Campbell	St. George's Channel	90	
Geo. J. Matheson	L'Archeveque	88¼	
Alex Matheson	St. Esprit	88	
Murdoch A. McLeod	Loch Lomond West	85¼	
N. D. Morrison	Loch Side	85	
W. J. McLeod	Loch Lomond West	84¾	
A. D. McCuish	Loch Side	83	

Judge:—Harry R. Brown, Wallace Bay.

Yarmouth County.

Harry Cann	Cheggogin	91¾	1st
A. C. Servant	Overton	90½	2nd
Judson Clements	South Ohio	89¾	3rd
Geo. E. Killam	Cheggogin	87¾	4th
J. C. Corning	Cheggogin	86	5th
A. Corning	Cheggogin	85½	
Geo. Taylor	Foote's Corner	84½	
Murray Crosby	Dayton	80	
S. A. Cook	Central Chebogue	77	

Judge:—F. L. Fuller, Agricultural College, Truro, N.S.

WHEAT.

Antigonish County.

Ronald Boyd	Morristown	93¾	1st
Crockett Bros	Antigonish	92¼	2nd
Ronald Chisholm	Antigonish	89¾	3rd
Mrs. Allen J. Ross	North Grant	89½	4th
McMullen Bros	West River	89¼	5th
Alex. McPherson	Cloverville	89	6th
E. H. Jocelyn	Antigonish	88½	
Alex. C. Chisholm	North Grant	88¼	
D. A. McInnes	Georgeville	88	
John C. Chisholm	Lower South River	86½	
Dan. J. McDonald	South Lochaber	86¼	
Colin F. McAdam	West River	80¾	
Rory Fraser	S. S. Harbour	74	

Judge:——Harry R. Brown

Colchester County.

Geo. H. McKay	Balmoral Mills	95	1st
R. D. McKay	Balmoral Mills	89½	2nd
John Murray	East Earltown	89	3rd
John Swan	Denmark	88½	4th
James Hogan	Denmark	87½	5th
George S. Baillie	Balmoral Mills	87	
John R. Cunningham	Bayhead	86½	

Judge:—W. G. Outton

Cumberland County.

Arthur Tuttle	Wallace Bay	94¼	1st
Barry Baker	Barronsfield	91	2nd
Stanley Logan	Amherst Point	90½	3rd
A. Bradshaw	Amherst	90¼	4th
Laurie MacFarlane	Fox Harbour	89½	5th
Chas. Logan	Amherst Point	87	6th
T. H. McNutt	Wallace Grant	85	
D. M. Bacon	Fox Harbour	83½	
DeMille Forrest	Amherst Point	81	
A. H. McIntosh	Wallace Grant		

Judge:—Lionel Stevenson

Halifax County.

Robt. Kaulback	Middle Musquodoboit	89¼	1st
A. D. Burris	Middle Musquodoboit	88¼	2nd
Robt. McCurdy	Middle Musquodoboit	86	3rd
Fenwick Kent	Centre Musquodoboit	85¾	4th
David Archibald	Centre Musquodoboit	80½	5th
Clarence Muir	Centre Musquodoboit	76¾	
Geo. S. Dickie	Middle Musquodoboit	76¼	

Judge:—B. H. Landals.

Inverness County.

A. J. Campbell	Black River	91	1st
A. T. Beaton	Glenora Falls	88½	2nd
Angus C. Campbell	Glenora Falls	86½	3rd
Alex. Cameron	Black River	86½	4th
James Hawley	Mabou	83½	

Judge:—S. J. Moore.

NOVA SCOTIA POTATO COMPETITION FOR 1912.

Jas. Roope, Hill Grove, Digby Co., N. S.	90	$10.00
H. S. Taylor, East Dalhousie, Kings Co.	89½	9.00
John J. Inglis, North Lochaber, Ant. Co.	88½	8.00
H. A. Longley, Paradise, Kings Co.	85½	7.00
Wallace Rhodeneizer, Bridgewater	85	6.00
Frank Kennedy, Salt Springs, Ant. Co.	84	5.00
Alex. C. Chisholm, North Grant, Ant. Co.	83½	4.00
Jos. McKay, Upper Northfield, Lunenburg Co.	83	3.00
Adolphus McKay, Upper Northfield, Lunenburg.	81½	2.00
Dan C. McNeill, Brophys, Ant. Co.	80	1.00
Benj. Bezanson, Clarence		
John C. McIntosh, Dunmore		
John C. Chisholm, Lower South River, Ant. Co.		
S. A. Cook, Central Chebogue, Yarmouth Co.		
Willis Fancey, Bridgewater		
Fred Slaunwhite, Conquerall Mills Lunenburg Co		
C. H. Downie, East Margaretville, Annapolis Co.		

Judge:—Paul A. Boving, McDonald College.

TURNIP COMPETITION FOR CUMBERLAND AND COLCHESTER COUNTIES.

For the best acre of Turnips grown by a boy between 15 and 20 years of age.

Colchester County. 15 entries.

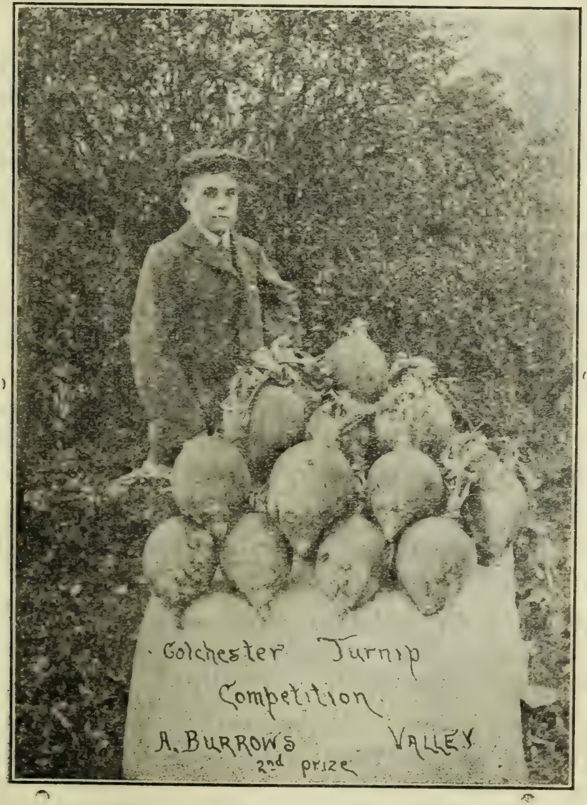
				Yield per Acre. Bus.
Baxter Fulton, Bass River	1st	$75	93½	1375
Albert Burrows, Valley Station	2nd	$50	89½	1225
Frank S. Crowe, Old Barnes	3rd	$30	87½	1300
Lloyd Johnson, Up. Stewiacke	4th	$20	83	1025

Cumberland County. 13 entries.

A. G. McLellan, R.R. No. 1, Amherst	1st	$75	85½	1100
Laurie Brown, Pugwash	2nd	$50	81	925
Roy Jackson, Lorneville	3rd	$30	75½	850
Lyman Chapman, Hastings	4th	$20	74½	600

Judges: F. L. Fuller,
S. J. Moore.

A Prize Winning Field in the Boys' Turnip Growing Competition.



The Boy who grew the Turnips.

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to make my fourth annual report of the County Exhibitions.

Including the Horticultural Exhibition which was held at Bridgetown, and represents three Counties, and the Cape Breton Island Exhibition which represented the four Island Counties, there were twelve very successful County Exhibitions held.

This is the largest number of Exhibitions ever held in the Province. But the increase in numbers does not adequately represent the increase of exhibits, the additional prize money paid, nor the rapidly growing popularity of these local fairs.

In fact, the good feeling toward local shows has developed to such an extent that everywhere Exhibition Associations are asking for increased grants for the purpose of increasing their accommodations for exhibits.

Nor is that all; at the Annual meeting of the Nova Scotia Farmers' Association at Sydney in January, a resolution was passed asking the Provincial Government to provide funds for the holding of district exhibitions in addition to County Fairs.

While we are glad to note the improvement in County Exhibitions, we feel that there is a possibility of overdoing the show business.

District Exhibitions would be merely a collection of County Fairs and consequently would not be of any higher standard or more educative than the individual county shows.

Our Province is small and for some time to come we feel that the County Fairs and Provincial Exhibitions will supply all our needs in this respect.

In comparing the following statement with the previous one, it will be noticed that there has been a large increase in almost every Fair.

In Sydney a Commission acquired grounds and erected buildings and what was formerly a Cape Breton County show was opened to the four Island Counties.

The result was that the amount of prize money paid out nearly doubled and the gate receipts more than trebled and there was a substantial balance to their credit. In Shubenacadie, grounds were purchased and buildings erected at a large expense. They had a splendid line of exhibits and although they had largely increased their prize list and were exceptionally unfortunate in weather, came out practically even.

The majority of the Shows had favorable weather and are rejoicing in the state of their finances. Parrsboro held the first exhibition in its history and had a substantial surplus.

So far as possible the Fairs were arranged in two ciruiuts and expert judges provided for the different departments.

The following judges were supplied by the Agricultural Department.—

J. Sim Harris, J. R. Starr, S. A. Logan, Prof. L. Stevenson, J. P. Landry, H. H. Henry, Harvey Mitchell, G. A. McKenzie, W. A. McKay, Prof. Shaw, Geo. H. Vroom, Prof. Landalls, S. J. Moore and F. L. Fuller.

Respectfully submitted.

F. L. FULLER.

EXHIBITIONS, 1912.

COUNTY	Place	Dates	Secretary	Gate Receipts	No. of Exhibits	Prize Money	Total Receipts	Total Expeuditure
Antigonish...	Antigonish....	Sept. 26, 27	Alex. McDonald..	$ 686 46	1580	....	....	....
Cape Breton..	Sydney.......	Sept 24 to 28	S. P. Challoner...	4095 55	3095	$3896 60	$9149 33	$7807 83
Cumberland..	Parrsboro....	Oct. 7, 8....	J. H. Cameron...	341 85	....	328 25	1110 60	778 86
Colchester & E. Hants...	Shubenacadie.	Oct. 1 to 3..	W. D. Bowers....	665 35	1856	1025 55	1809 11	1841 03
Digby.......	Bear River...	Oct. 4......	C. F. McDormand	151 23	1080	373 85	808 15	639 62
Guysboro....	Guysboro.....	Oct. 8, 9....	Chas. E. Jost....	259 55	1169	623 45	925 92	924 95
Horticultural..	Bridgetown...	Oct. 2 to 4..	R. J. Messenger..	637 55	4297	1359 10	1938 95	1956 80
Halifax......	Musquodoboit	Sept. 24, 25.	Chas. Logan.....	502 30	....	578 00	1442 40	1505 45
Lunenburg...	Bridgewater...	Sept. 26 to28	Jas. A. Curll.....	1666 65	1904	850 95	2978 30	2852 93
Queens.......	Caledonia....	Oct. 1, 2....	Josiah Smith.....	410 75	1072	469 30	915 59	754 55
Shelburne....	Shelburne....	Oct. 2, 3....	H. H. West......	185 00	....	391 30	665 24	666 55
Yarmouth....	Yarmouth....	Sept.25 to 27	Wm. Corning....	2036 93	1958	1878 50	5009 16	5097 81

Professor M. Cumming,
Secretary for Agriculture
Truro, N. S.

Sir —I have the honor to submit my third annual report in connection with the Government Ditching Machine.

The machine remained on the premises of Cunningham Bros. at Bay Head. After completing the work on that farm it was brought to Truro and fitted with a new Ditching wheel and other repairs made.

We then excavated about 100 rods of ditches for draining? roads, laying water and sewer pipes around the College buildings.

It was then taken to the Government Farm, dyked marshland where about 150 rods of swampy marshland was successfully drained.

It was then taken to Kings County where it was operated for the balance of the Season.

Owing to the fact that during the early part of the Season when the weather was favorable, it was almost impossible for the farmers to get tiles, and later due to the wet weather, the machine did not do a big season's work.

The total number of rods excavated was about 3705.

The work was done for the following persons:

Cunningham Bros., Bay Head	200 rods
Ayrton Johnson, Grand Pre	1300 "
Wolfville Land Improvement Co.	609 "
Bedford Chase, Port Williams	326 "
W. H. Chase, Wolfville	350 "
E. Johnson, Port Williams	184 "
Sir Frederick Borden, Wolfville	500 "
Agricultural College Farm	240 "

The majority of the work during this season was among apple trees.

The work done for W. H. Chase, Bedford Chase and Sir Frederick Borden was on dkyed marshland.

The work done by the machine has been satisfactory and there are orders enough in sight to keep it busy for some years to come.

Respectfully submitted,

F. L. FULLER.

Professor M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir —I have the honor to submit my fourth annual report of the County Farmers' Associations.

The Association now numbers thirteen the same as last year.

The total membership is 2261 or 51 more than last year. The number of meetings held was 190 which is 30 less than last year.

The total attendance was 8137 which was 1918 less than last year. The average was 43.

The number of meetings held in unorganized counties and not reported under the head of County Associations was 41, attendance 2045, average attendance 50. This makes a total of 10182 average attendance 44. In addition many large gatherings, such as meetings at Exhibitions, Farmers Excursions and Picnics were addressed.

It will be noted by referring to the tabulated reports on the following pages that while the membership has increased, the number of meetings has somewhat fallen off.

Unfavorable weather was largely responsible for this shortage. Haying and harvesting were both very late and there did not seem to be much time for arranging meetings. At the present time, farmers realizing lost opportunities are arranging a series of meetings in many Counties.

Through County Associations the Field Crops Competitions received valuable support. Several Exhibitions and Seed Fairs were also held under the auspices of these Associations.

In some Counties District Clubs were organized, with very beneficial results, under the County Associations.

During the Season two ploughing matches were held in Pictou County. The funds for these were very generously provided by private individuals. This is work which might bvery well e taken up by County Associations and the good work spread to other parts of the Province.

The following is a tabulated report of the Associations in each County, giving (1) names of chief officers, (2) total membership, (2) number of meetings, (4) total attendance, (5) average attendance, (6) total receipts, (7) total expenditure, (8) balance on hand.

All of which is respectfully submitted.

F. L. FULLER.

COUNTY ASSOCIATIONS.

COUNTY	No. of Members	No. of Meetings	Total Attendance	Average Attendance	Receipts	Expense	Balance
Annapolis							
President, Walter Purdy, Deep Brook; Vice-President, E. C. Shaffner, Williamston; Secretary, L. W. Elliot Clarence	202	28	1914	68	$126 12	$103 52	$22 60
Antigonish							
President, A. S. McMillan, Upper South River, Vice-President, Dr. Hugh McPherson, St. F. X. College; Secretary, Allan A. McDonald, Church Street, Antigonish	190	10	358	36	1571 63	1485 01	86 62
Cape Breton.							
President, Jacob H. Andrews, Coxheath, Vice-President, H. A. Moffat, North Sydney; Secretary, R. M. Jackson, Jacksonville	204	11	327	30	1581 86	1238 20	343 66

COUNTY ASSOCIATIONS.

COUNTY	No. of Members	No. of Meetings	Total Attendance	Average Attendance	Receipts	Expense	Balance
Cumberland.							
President, S. A. Freeman, Amherst; Vice-President, C. E. Davison, Halfway River; Secretary-Treasurer, C. H. Black, Amherst........................	70	22	360	30	112 30	90 15	22 15
Digby.							
President, W. A. Bacon, Acaciaville, Vice-President, D. C. McKay, Acaciaville; Secretary, F. W. Nichols, Digby..................................	160	12	329	27	206 59	83 64	122 95
Hants.							
President, John A. Scott, St. Croix; Vice-President, Avard Woolaver, Newport; Secretary-Treasurer, Howard Dimock, Scotch Village.................	131	10	255	35	106 78	50 91	55 87

Inverness.							
President, D. F. McLean, Port Hood; Vice-President, Dougald Campbell, S. W. Port Hood; Secretary, A. J. Campbell, Alexander P. O.	51	8	160	20	134 64	54 51	80 13
Kings.							
President, F. W. Foster, Kingston; Vice-President, L. R. Palmer, Aylesford, Secretary, W. H. Woodworth, Berwick	122	20	660	33	207 12	148 93	58 19
Lunenburg.							
President, Lemuel Hebb, Bridgewater; Vice-President, R. S. Taylor, Farmington; Secretary-Treasurer, J. L. DeLong, Barrs' Corner	181	17	1220	72	191 34	177 31	14 03
Pictou							
President, Caniel McDonald, Sylvester; Vice-President Wm. Murray, Union Centre; Secretary, F. W. Nicols, Digby	201	17	757	44	193 12	140 07	53 05
Queens.							
President, Z. F. Minard, Caledonia; Vice-President, H. L. Dailey, N. Brookfield; Secretary, M. U. Freeman, Kempt	56	7	355	51	129 25	45 65	83 60

COUNTY ASSOCIATIONS.

COUNTY	No. of Members	No. of Meetings	Total Attendance	Average Attendance	Receipts	Expense	Balance
Richmond.							
President, William Chisholm, Loch Lomond; Vice-President, Angus A. Morrison, Loch Lomond West; Secy-Treasurer, D. N. Morrison, Drummondville	91	12	396	33			
Yarmouth.							
President, Walter Churchill, Brooklyn; Vice-President, Chas. H. Doane, Dayton; Secretary-Treasurer, S. P. Goudey, Yarmouth..........................	602	16	1342	84	223 82	206 96	16 86
	2261	151	8137				

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Annual Report

OF THE

SECRETARY FOR AGRICULTURE,

NOVA SCOTIA

FOR THE YEAR 1913

(Printed by Order of the Legislature.)

HALIFAX, N. S.
Commissioner of Public Works and Mines,
King's Printer.
1914

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AGRICULTURE.

REPORT OF THE SECRETARY FOR AGRICULTURE FOR THE YEAR 1913.

The Honorable George H. Murray,

Provincial Secretary.

Sir:—In accordance with the requirements of the Act for the Encouragement of Agriculture, I have the honor to submit my Annual Report for the year 1913, which contains a statement of the work done during the year under the provisions of the Act and by authority of His Honor, the Lieutenant Governor-in-Council.

This Report embraces the following documents:—

Part I.—My Annual Report as Secretary for Agriculture for Nova Scotia. P. 1.

My Report as Principal of the Agricultural College, Truro, being the eighth Annual Report of the Nova Scotia Agricultural College and Farm. P. 17.

Report of the Professor of Botany. P. 25.

Report of the Provincial Entomologist and the Professor of Zoology. P. 34.

Report of the Professor of Horticulture. P. 51.

Report of the Farm Superintendent and Professor of Agriculture. P. 64.

Report of the Drainage Surveyor. P. 77.

Report of the Superintendent of the Poultry Department. P. 94.

Report of the Superintendent of Dairying. P. 102.

Report of Veterinary Surgeon. P. 109.

Report of Women's Institutes. P. 110.

Report of Chemist. P. 112.

Part II.—Report of Agricultural Societies, Associations, Exhibitions, Meetings, Drainage, and Field Crop Competitions. Pp. 1 to 99.

Part III.—Series of Articles on Gardening in Nova Scotia. Pp. 1 to 134.

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Secretary for Agriculture.

Truro, Feb. 1st, 1914.

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Short Course Students at Truro, January, 1914.

PART I.

AGRICULTURE.

REVIEW OF THE WORK OF THE AGRICULTURAL DEPARTMENT OF THE GOVERNMENT OF NOVA SCOTIA.

The Honorable George H. Murray,
Provincial Secretary,
Halifax, N. S.

Sir:—

I have the honor to submit the report of the Department of Agriculture for the year 1913. It includes three parts as follows:

Part 1—Contains the general report of the Secretary for Agriculture, including the Character of the Season, the Crops, Live Stock, the Work of the various Farmers and Fruit Growers' Associations and Societies, the Work of Women's Institutes, and a brief summary of the salient features of the reports printed in the following pages and written by the Heads of the various Departments. In regard to these latter reports, I may explain that nearly all the members of the Agricultural College staff are also Provincial officers and that, for purpose of brevity, their work in connection with the College as well as outside the College is included in one general report.

Part 2—Contains the Report of the Superintendent of Agricultural Societies and Associations and Exhibitions and treats in detail of (a) Agricultural Societies, (b) County Farmers' Associations, (c) Local Exhibitions, (d) Field Crop Competitions and (e) Operations of the Drainage Machine.

Part 3—Contains a series of educational articles on "Gardening in Nova Scotia" edited by Professor P. J. Shaw. This series is a continuation of the series of articles upon various topical subjects which was commenced in the year 1907.

THE SEASON OF 1913.

The Spring of 1913 opened about a week earlier than 1912. The first seeding on the College Farm was on April 24th (in 1912 the first seeding was on May 2nd), and by the last of April nearly all the oat land on the farm proper had been seeded down. Up to about the middle of May, the conditions for cultivation and seeding on lands that were either naturally or artificially well under drained were favorable, but, from about the middle of May to the end of the first week in June, a succession of rainy days made it impossible to do much farm work. The result was that many farmers, who failed to take advantage of the fine weather in the early part of the season, did not get their land seeded down until June; consequently their crops were late in maturing and were seriously damaged by early fall frosts. Late frosts in the Spring and early frosts in the fall proved damaging to the more tender crops. During the second week of June, there were from five to seven degrees of frost in many parts of the Province and during the last week of August there were frosts which injured the tender crops on the lower levels. In fact there was only one month (July) during the whole year which was free from frosts—fortunately an exceptional condition in Nova Scotia.

WEATHER OBSERVATIONS.

In the following table are presented the rain fall and the maximum and minimum temperatures as determined at Truro by Mr. B. H. Landells, Superintendent of the Drainage and Experimental Department. The temperatures are given in degrees Fahrenheit. For comparison the rain fall of 1912 is included. The rain fall at Truro was lighter than in many other parts of the Province.

MONTH	Max. Tem.	Min. Tem.	1913 Rain Fall	1912 Rain Fall
January	57	−2.5	2.96	3.49
February	52	−24	2.58	2.85
March	59	−1.5	4.70	2.14
April	72	13.5	5.93	2.32
May	69	24	2.69	3.17
June	72.5	28	1.49	2.89
July	83	41.5	2.36	4.32
August	82	33	2.34	2.93
September	73	30	3.11	2.51
October	73	27.5	9.21	1.52
November	64	9.5	2.98	4.26
December	56.5	2.5	4.38	4.86
			44.73	37.26

CROPS.

Hay and the cereals crops were from five to ten per cent superior to 1912. The hay crop, owing to the dry conditions prevailing during July and August, was cured in magnificent condition and the oats and other cereals which were sown early were equally well housed. Unfortunately upwards of 25 per cent of these crops were late sown and were severely injured by the frosts and rains.

Potatoes were about 15 per cent below the yield of 1912 and in several localities the late potatoes were considerably damaged by frosts. Turnips, mangels and other roots were about equal to 1912 and were generally considered a good crop. Pastures in the early Spring were good but became very dry during midsummer and the fall pastures, owing to the heavy precipitation, were almost unsurpassed.

A reference to the fruit and garden crop will be found in the Report of the College Horticulturist. It is sufficient to state that, making allowance for increased acreage under crop, the yield of 1913 was only about 60 per cent that of 1912 and only about 30 per cent of that of 1911. Unfortunately, too, the quality, due to the prevalence of black spot, was considerably below the average. Garden crops, with the exception of the more tender sorts such as pumpkins, corn, etc., were fully up to average.

The following table based upon the acreages for each crop as given in the Dominion Census of 1911, plus the increase of acreage estimated by our correspondents, represents the yields of the various crops for the season of 1913.

Crop	Acres	Yield per acre Bushels	Total yield Bushels.
Oats	102,054	37	3,775,998
Wheat	13,726	25	343,150
Barley	5,978	31	185,318
Buckwheat	11,580	25	289,500
Peas	209	17	3,553
Beans	950	17	16,150
Rye	919	22	20,218
Mixed Grains	4,356	34	137,104
Corn for Husking	142	40	5,680
Potatoes	29,949	190	5,690,310
Turnips	10,200	604	6,160,800
Mangels	1,123	506	568,238
		Tons	Tons
Hay	505,207	1.8	909,372
Corn for forage	640	10	6,400
Other Forage Crops	1,300	10	13,000
Alfalfa	35	(Experimental)	
Flax	6		
Other roots—Carrots, Parsnips, Beets	1,100		
Apples	585,000 barrels.		

Averaging up the whole season I may state that, with few local exceptions, it has been a favorable one for the general farmer but for the fruit grower it has been considerably below the average.

CONDITION AND NUMBERS OF LIVE STOCK.

There has not been much change in the numbers of live stock. The main advance has been a small increase in the number of dairy cattle kept and a somewhat greater increase in the number of poultry. The principal improvement has been in the quality of nearly all classes of stock and more especially of dairy cows, horses and poultry.

AGRICULTURAL COLLEGE AND FARM.

More progress has been made at the Agricultural College during 1913 than any previous year. A very considerable proportion of the Dominion Appropriation for the Aid to Agriculture during the past two years has been contributed towards improving the plant at the College and also towards supplementing the current expenses of the institution. The increased laboratory space afforded through new buildings and the additions made to the faculty have brought the institution to a foremost place in the Dominion of Canada. The attendance in the regular course for the present session is 102, which is some 12 below that of last year, due largely to a decreased enrolment from abroad and to a somewhat reduced attendance from the fruit counties due, probably, to the poor returns received for fruit. When we come to the Short Course, the increase is very marked. In January 1913, the enrolled attendance was 223 and in January 1914, the enrolled attendance was 351. The total attendance therefore for the current session is far in excess of the previous year. A full statement will be found in the Principal's Report, which appears in the subsequent pages of this publication.

THE NOVA SCOTIA FARMERS' ASSOCIATION.

The 1913 meeting of the Nova Scotia Farmers' Association was held in the month of January at Sydney, and the 1914 meeting is to be held in the same month at Bridgewater. It is believed by the members of this Association that there is an advantage in moving the Annual Meeting from place to place in that it helps to spread the gospel of good and well organized agriculture into every part of the Province. A separate report of this Farmers' Association is annually issued and may be had on application to C. R. B. Byan, Secretary of the Nova Scotia Farmers' Association, Truro, Nova Scotia.

COUNTY FARMERS' ASSOCIATIONS.

In twelve counties of Nova Scotia there are organized sub-associations of the Provincial Organization. These Associations are concerned with agricultural matters in the various counties in which they exist. Some of these associations confine themselves to the holding of meetings. Others hold exhibitions and Seed Fairs and all are ready to take hold of any movement that may lead to the betterment of agriculture in their respective counties. An abstract of the reports of these associations will be found in part 2 of this publication.

THE NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.

The Annual Meeting of the Nova Scotia Fruit Growers' Association for 1913 was held in Middleton during the month of January and the Annual Meeting for 1914 will be held in Kentville. This Association is becoming increasingly active in looking after the fruit interests, more especially in the counties of Annapolis, Kings and Hants. A report is issued and may be secured on application to M. K. Ells, Secretary, Port Williams, Kings County, N. S.

THE UNITED FRUIT COMPANIES.

This is a private corporation and does not receive any grant from the Government. Since however this Company embraces nearly all the local co-operative companies organized in Nova Scotia and is handling nearly 60 per cent. of the fruit crop of the Province, there is a large interest in its operations. The Manager is S. B. Chute, Berwick, N. S., and the Secretary A. E. Adams, Berwick, N. S.

MODEL ORCHARDS.

The major part of investigation work carried on in fruit growing in the so-called fruit counties is now under the direction of the Manager of the Experimental Fruit Station at Kentville. The Department of Agriculture is, therefore, devoting its energies to investigations and demonstrations in fruit growing in the remaining counties of the Province. In connection with this work, an experimental orchard is being grown at Truro and some thirty-five model orchards have been located from end to end of the Province. The work has been further extended during the past season to demonstrations in the renovation of old orchards. A report of all this work will be found in the report of P. J. Shaw, Professor of Horticulture, which appears in a subsequent part of this publication.

MEETINGS.

There were held during the year 276 official public meetings with a total attendance of 9684 and an average attendance of 36. The practice of holding meetings without any definite subsequent purpose in view has been largely abandoned for it has been felt that the Province was not getting returns from many of these meetings.

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*Antigonish not reported.

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First Annual Convention of Womens' Institutes of Nova Scotia, held at the Agricultural College, Truro, in Janaury, 1914.

The more important meetings of 1913 were held in order to organize and educate the people in connection with the establishment of co-operative creameries, the growing of good seed, etc. A detailed report of these meetings will be found in part 2 of this report.

AGRICULTURAL SOCIETIES.

There are now 219 Agricultural Societies in Nova Scotia, representing an increase of 14 over last year and an increased membership of 745. No doubt, this increase has been in part due to the larger appropriation made according to the new Act for the Organization of Agricultural Societies passed by the House of Asesmbly in 1913, which provides for a grant of $15,000 instead of $10,000 as formerly. A good feature of the new Act is that while $14,000 of the total appropriation is divided pro rata, the sum of $1000 is set aside for the purpose of rendering assistance to Societies that have met with reverses or that will make some improvement in their methods of keeping stock, such as the construction of bull paddocks, etc. For detailed report see part 2.

WOMEN'S INSTITUTES.

The Dominion Appropriation for Agriculture having, as subsequently stated, made provision for several lines of advanced work none has been of greater importance than the organization of Women's Institutes, which was begun in July, 1913. Miss Jennie A. Fraser, a graduate of Macdonald College, has been appointed as Acting Superintendent and in her report, which appears in this publication, she shows that an active campaign has been begun. Fourteen Institutes have already been organized; the first Annual Convention has been held, and preparations are now under way for extending the organization throughout the whole Province.

EXHIBITIONS.

The following Exhibitions were held during the year:—The Nova Scotia Provincial Exhibition, Halifax; the Maritime Horse Show, Amherst; The Maritime Winter Fair, Amherst; and thirteen county exhibitions. Special legislation was passed during the session of 1913 providing for increased grants to the county exhibitions and also providing for the uniting of several counties to carry on a district exhibition. Under this latter head, an exhibition was held at Sydney, which received the grants of the four Cape Breton counties, and another was held at Windsor, which received the grants of the three counties Annapolis, Kings and Hants. In order that a district exhibition may receive the grants of two or more counties, it is necessary that the management of the proposed exhibition get the consent of the majority of the Agricultural Societies in those counties as well as the majority of the Municipal Councillors.

It is extremely satisfactory to observe the success more especially of these local exhibitions and the excellent work which they are accomplishing. In addition to the regular appropriation given as per the Act referred to in the foregoing, the Department sends disinterested expert judges and during 1913, with the aid of money supplied from the Dominion Appropriation, conducted educational booths which were evidently very much appreciated. See full report in part 2 of this publication.

Beside these County Exhibitions a number of Poultry Shows have been organized an account of which will be found in the report of the Poultry Superintendent and also a most successful series of Seed Fairs at Truro, in Colchester County, at Port Hood, in Inverness County, at Antigonish, in Antigonish County and at Musquodoboit in Halifax County. The unqualified success of these Seed Fairs has been greatly contributed to by the special assistance received from the Seed Division of the Department of Agriculture at Ottawa.

FIELD CROPS COMPETITIONS.

Just as 1912 represented a great advance in Field Crop Competitions over the previous year, so 1913 has represented a great advance over 1912. Briefly, there were 137 entries in 1912 in the Competitions in the growing of the best seed oats, wheat and potatoes. In 1913 there were 291, an increase of 112 per cent. These Field Crops Competitions are extremely important to the agriculturists of Nova Scotia for they are proving the means of getting an increasing number of farmers in the province to grow their own seed. It is most satisfactory to the Provincial Department of Agriculture to have the cooperation, in this important work, of the Dominion Department of Agriculture for through the Seed Division of the Federal Department approximately $1000 of the prize money, representing about 50 per cent of the total cost of carrying on the Competitions, was received. Besides, the representative of this department, S. J. Moore has given a large part of his time to this work.

We are gratified to notice the increased interest in the Turnip Growing Competition held in Colchester and Cumberland Counties, the funds for which (amounting to over $400) have been provided by a Nova Scotian living in New York. It is our belief that no better work for the improvement of Agriculture in Nova Scotia has been inaugurated than this Turnip Growing Contest for Boys and we only wish that there were other equally philanthropic men who would join with this Nova Scotian New Yorker in making it possible to stimulate the boys of our country in improved methods of agriculture. For full report of these competitions see part 2.

DRAINAGE.

The Government drainage machine has been operated during the year for the most part in Colchester and Kings Counties. It is doing good work but cannot begin to overtake the contracts offered. Mr. B. H. Landels, of the College staff, has made a considerable number of free surveys of farms for drainage purposes. Read full statement in subsequent reports of Mr. Fuller and Mr. Landels.

DAIRYING.

In 1912 we reported that 27 per cent more butter had been made in the creameries of Nova Scotia than in 1911 and in 1911, we reported an increase of 30 per cent over the previous year. And now in 1913, we take a big step forward and report an increase of 49.8 per cent over 1912. It certainly begins to look as if our predictions that Nova Scotia would develop into a great dairy country are beginning to come true and since, we believe dairying to be the most important agricultural industry in Nova Scotia, we would urge everyone to read the Subsequent report of W. A. MacKay, Dairy Superintendent for the Province, who has done such excellent work since his appointment to office less than two years ago.

THE CAMPAGIN AGAINST OUR INSECT FOES.

Recognizing the dangers which Nova Scotia farmers and fruit growers have to fear from insect pests, the Government appointed in Sept. 1912, a Provincial Entomologist, Dr. Robt. Matheson, under whose administration a strong Department has been organized. Dr. Matheson resigned his position to accept an important appointment at Cornell Universty in October last and has been succeeded by W. H. Brittain, B. S. A., formerly Entomologist and Plant Pathologist for the Province of British Columbia. A reference to both of these men will be found in the report of the Principal of the Agricultural College and their reports will be found in subsequent pages of this Report. In addition to investigation and teaching work carried on, the greater part of the active work of the Provincial Entomologist has been devoted to an attempt to suppress the Brown Tail Moth and the San Jose' Scale. The Brown Tail Moth Campaign is under the direction of the Dominion Entomologist with whom the Provincial Entomologist is co-operating by supplying an equal number of men and sharing about equally in expense. The report of the present year will indicate that while very efficient work is being carried on, yet the pest is making headway. In 1911-12, 7707 nests were taken; in 1912-13, 11054 nests were taken and during the present winter 14000 nests have already been taken. It must be remembered, however, that in Massachussets where this pest was first discovered in 1894, it had multiplied to such an extent that by 1899 upwards of $1,000,000 had to be spent in its suppression and the trees in many of the smaller towns and cities were almost completely destroyed. Whatever may be the final outcome in Nova Scotia, seven years have elapsed since the pest was first discovered and, were it not for the frequent reports from Dominion and Provincial Entomologists, the people would scarcely know that this dreaded pest was in their midst.

The San Jose' Scale campaign seems at the present time to have been more successful. In 1912 the inspectors destroyed 723 trees infested with living scale and in 1913, after one of the most thorough searches ever made in any campaign in Nova Scotia, only 57 infested trees were discovered. Of this latter number six were of 1913 planting, having come from New York State and having passed through inspection and fumigation at the ports of entry.

We would especially direct the attention of those interested in this important subject to the excellent report given by Dr. Matheson, who held office until almost the end of the year, and we would urge the people of Nova Scotia to get in touch with his successor, W. H. Brittain, who is ably carrying on the campaign.

HORSE IMPROVEMENT LEGISLATION.

The Act for the Encouragement of Horse Breeding in Nova Scotia which was passed in May, 1912, came into force in January, 1913. According to this Act, no person, firm or company shall keep any stallion for public service unless the name, description and pedigree of such stallion shall have been enrolled in the Department of Agriculture and a certificate of such enrolment secured. Stallions may be enrolled in one of the three following classes:—

Form A—Pure Bred. This class includes all horses whether Standard Bred or Clydesdale, or Percheron, or any other breeds that are eligible for registration in the Canadian National Records.

Form B—Grade. This class includes all stallions whose sires are of pure breeding but whose dams are not of pure breeding.

Form C—Cross Bred. This class includes all other stallions to which the common appellation of "scrub" is given.

The total number of horses enrolled for the year was 281. Of this number 99 were in class A, 83 in class B, and 99 in class C. This means that only one third of the stallions in Nova Scotia are registered horses and at once lets the public know why we have to go to Kentucky or Ontario or Great Britain if we wish to buy a high class horse. There is not a single country in the world where large numbers of good horses exist but where the pure bred sire is king and it is certainly to be hoped that the horse breeders of Nova Scotia will stand shoulder to shoulder in the campaign which has been started to rid our country of the mongrel horse. The figures are indeed startling but if people will set aside personal interest and narrow carping criticism, we look forward to the day, perhaps not more than a decade hence, when this state of affairs will be changed and when, instead of less than one third of the stallions of the country being registered, the vast majority of these stallions will be at least be eligible for registration.

The following breeds were included in class A:—

Standardbreds	41
Thoroughbreds	3
Hackneys	5
French Coach	3
German Coach	1
French Canadian	1
Clydesdales	38
Percherons	7
Total	99

This Act has been strengthened by an Act passed in 1913 entitled "The Inspection of Stallions Act." This Act makes provision for the optional inspection of stallions for soundness, a report of which inspection shall form a part of the record of enrolment. Under the provisions of this Act, each class of horses Pure Bred, Grades and Cross Breds may be enrolled in one of three schedules as follows:—

A.—Inspected and pronounced sound,

B.—Inspected and pronounced unsound, the unsoundness to be stated in the enrolment certificate.

C.—Not inspected.

The inference to be made when a stallion is not inspected is that the owner is afraid to subject him to a veterinarian's examinations.

SPECIAL APPROPRIATION FROM THE DOMINION GOVERNMENT FOR THE AID OF AGRICULTURE IN THE PROVINCE.

The Department of Agriculture of the Government of Nova Scotia received from the Federal Department at Ottawa for purposes of Agricultural education during the year 1913, the sum of $54,288.45 to be spent as per agreement as follows:—

(a) Additions to the staff and increased means of efficiency at Agricultural College........	$10,000.00
(b) Balance due on buildings constructed out of grant for 1912........................	9,000.00
(c) Agricultural education in the Rural Schools, including the conducting of a Summer School for the teachers at Truro, the giving of extra grants to teachers who have school gardens, and assistance to School Boards in establishing school gardens and the employment of a Director of Rural Education........	7,500.00
(d) Employment of men to carry on demonstration work in the country and at the fall exhibitions together with materials used for this purpose...........................	10,000.00
(e) Entomological and Fruit Growing investigation and educational work................	6,000.00

(f)	Dairy education, including half salary and expenses of the dairy instructor and the holding of meetings	2,000.00
(g)	Educational work for Poultry	500.00
(h)	Assistance in publishing of Farmers' Bulletins, Leaflets, etc	500.00
(i)	Demonstrations with fertilizers, especially ground lime-stone, which has not been used before in the Province	300.00
(j)	Organization of Women's Institutes	1,000.00
(k)	Special educational work renovating old orchards	1,000.00
(l)	Short Course during winter of 1913-14	5,000.00
(m)	Contingencies of any kind connected with or required for the successful carrying on of the above mentioned lines of expenditure	1,488.45
		$54,288.45

Subsequently, in October, it was thought advisable to ask that the appropriation be somewhat changed and the Honorable the Minister of Agriculture agreed that alterations be made which would provide for the divisions, mentioned in the foregoing, the following amounts of money:—

(a)	College	$12,000.00
(b)	Buildings	10,000.00
(c)	Rural Science	5,500.00
(d)	Demonstration Field	4,500.00
(e)	Entomological Inspection	8,500.00
(f)	Dairy Education	3,000.00
(g)	Poultry	500.00
(h)	Bulletins	500.00
(i)	Demonstrations Fertilizers	300.00
(j)	Women's Institutes	2,000.00
(k)	Orchards-Demonstrations	1,000.00
(l)	Short Courses	5,000.00
(m)	Contingencies	1,488.45
		$54,288.45

It is needless to say that this appropriation has already proven of great value to the Department of Agriculture. I can only briefly discuss the matter here but refer anyone interested to an article published by the undersigned in the second number of the Agricultural Gazette, published by the Department of Agriculture at Ottawa.

Altogether out of the appropriations of 1912 and 1913, about $42,000 have been spent on two new buildings at the Agricultural College and one need only appeal to any of the hundreds of students who have been at the College during the past few months to learn what good use these have been put to. The main building has been nearly doubled in size by the addition of a large Assembly Hall, a library and reading room, a new class room, a capacious basement and janitors' quarters. Also a complete Horticultural Building has been constructed, which makes it possible to give that subject its proper emphasis in the College studies.

The appropriation for the Aid of Agriculture in the Common Schools has made possible the appointment of a Director of Rural Education, L. A. DeWolfe, B. A., the appointment of a Principal of the Rural Science School, C. L. Moore, M. A.; the enlargement and increased efficiency of the Rural Science School carried on by the affiliated Agricultural and Normal Colleges for the purpose of qualifying teachers to teach elementary agriculture and nature study in the rural schools. A full discussion of this will be found in the report of the Superintendent of Education.

Out of the appropriation for carrying on Short Courses, throughout the Province, grants have been given to the Agricultural Societies at Yarmouth, Bridgewater, Shubenacadie and Musquodoboit, which Societies have supplemented these grants sufficiently to erect very creditable buildings in which to permanently house Short Courses, the first series of which will be held at these centres during the month of February, 1914.

So far as demonstration is concerned, a considerable beginning had already been made but the appropriation of 1913 has made it possible to greatly increase this work. For details in regard to this we would refer the reader to the work of Mr. H. S. Cunningham in Cape Breton, which was carried on jointly by appropriation from the Federal and Local Departments of Agriculture. A similar line of demonstration has been commenced in the renovation of old orchards in several counties in Nova Scotia, an account of which will be found in the report of Prof. P. J.

Shaw. The demonstrations in the use of commercial fertilizers are sure to give useful results, more especially those connected with the application of ground lime stone to various kinds of land on upwards of fifteen selected farms. Full reports from this application cannot become available for several years.

In no respect has the Dominion appropriation been more helpful in Nova Scotia than in supplementing the local appropriation for the purpose of carrying on a thorough educational campaign for the extermination of San Jose′ Scale and Brown Tail Moth. The fund became available just at a critical period and our Provincial Entomologist has been enabled, by means of the extra financial provisions made to carry, on a most thorough campaign which it is hoped will save this Province from being overrun with these most serious pests.

The supplementing of the Local Government appropriations for education along dairy and poultry lines from this Dominion Appropriation has also been timely, for the Superintendents in charge have, through this extra aid, been able to carry on a more efficient and comprehensive educational campaign than in any previous year.

As mentioned in a foregoing paragraph, the Dominion Appropriation has made possible the organization of Women's Institutes in Nova Scotia, a report of which will be found in subsequent part of this publication.

In concluding this part of my report, I am pleased to be in a position to give full credit to the Honorable the Minister of Agriculture at Ottawa for the splendid assist. ance which the appropriation from the Department over which he presides has given the various officers in the Provincial Department of Agriculture in carrying on an educational campaign for the betterment of things agricultural in the Province.

CONCLUSION.

In my report of 1912, I stated that "1912 has been a year of progress but 1913 will see still more progress." Anyone who reads the foregoing pages or who takes the time to observe the development that is taking place throughout Nova Scotia cannot, it seems to me, but agree with this statement. From year to year progress has been made and on behalf of the members of the Department of Agriculture and of the staff of the Agricultural College, I am bound to thank yourself, the Honorable

Provincial Secretary, who presides over this Department, and the various members of the Nova Scotia Government for the support and advice which you have given whenever it was needed.

I hope I may not be considered egotistical when I state that a continuation of the same support which has been received ever since I have been connected with the Department of Agriculture will yield a fruitage of agricultural achievement in Nova Scotia which was never dreamed of when the Department of Agriculture was first organized. On behalf of the staff of the Department of Agriculture

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Secretary for Agriculture.

NINTH ANNUAL REPORT OF THE NOVA SCOTIA AGRICULTURAL COLLEGE AND FARM.

Sir:—

I have the honor to submit the ninth Annual Report of the Nova Scotia Agricultural College and Farm, being for the year 1913. The Report is divided as follows:—

Part 1—Report of the Principal.
Part 2—Report of the Professor of Botany.
Part 3—Report of the Professor of Zoology and Provincial Entomologist.
Part 4—Report of the Professor of Horticulture.
Part 5—Report of the Professor of Agriculture and Farm Superintendent.
Part 6—Report of the Professor of Field Husbandry and Farm Drainage.
Part 7—Report of the Manager of the Poultry Department.
Part 8—Report of the Superintendent of Dairying and Lecturer in Dairying.
Part 9—Report of the Lecturer In Veterinary Science.
Part 10—Report of the Superintendent of Women's Institutes.

PART 1—REPORT OF THE PRINCIPAL.

As stated in the Report for the Secretary for Agriculture, nearly all the members of the Agricultural College staff are also Provincial officers and hence with this College Report is combined a report of the work carried on in the Province.

The Regular Course.

The enrolment in the Regular Course for the term 1913-14 is 102. Of this number 54 are from Nova Scotia, 27 from New Brunswick, 8 from Prince Edward Island, 1 from British Columbia, 1 from Ontario, 6 from Great Britain, 2 from Newfoundland, 2 from United States, and 1 from Belgium. There are 47 Seniors and 57 Juniors. The enrolment is 12 less than for the preceding term, the principal difference being that there are fewer students from abroad; besides the attendance of 1912-13 was considered by the faculty as abnormally large in comparison with any previous enrolment.

Graduates of 1912-13.

Of those students who attended the College during 1912-13, 25 were awarded the Associate of the College as follows:—

Archibald, J. G., Upper Stewiacke, N. S.
Woodman, H. E., Grand Pre, Kings Co., N. S.
Bligh, R. D. L., Lakeville, Kings Co., N. S.
Gooderham, Charles, Round Hill, Annapolis Co., N. S.
Donaldson, Ralph, Port Williams, Kings Co., N. S.
MacCharles, M. D., Baddeck Bridge, C. B.
Tattrie, Amos C., River John, N. S.
Bragg, P. D., Moncton, N. B.
Cochran, G. Wesley, Upper Dorchester, N. B.
Peterson, Clyde, Great Barrington, Mass.
Hodgson, True, Collingwood Corner, N. S.
Smith, Clarence B., Hoyt Station, N. B.
Crawford, Gordon, Windsor, N. S.
Woodroofe, Miss Helen, Dartmouth, N. S.
Weldon, R. A., Upper Sackville, N. B.
Graves, G. Wesley, Aylesford, N. S.
Hicks, Ora, Peticodiac, N. B.
McMahon, Arthur, Aylesford, N. S.
Ilsley, Philip S., Somerset, Kings Co., N. S.
Boulden, Eric, Windsor, N. S.
Morash, Edwin, Dartmouth, N. S.
Munro, H. Parker, Bridgetown, N. S.
Arthurs, William, St. John, N. B.
Hunt, Alfred S., Lawrencetown, N. S.
Dustan, Alan, Bridgetown, N. S.

G. Crawford, who took the two years in one will be awarded the diploma when he passes a supplemental examination in Agriculture.

The Premier Murray cup for the best judging of Live Stock was awarded to J. G. Archibald, Upper Stewiacke, and the Prince Edward Island Students' Cup for the best judging of seeds was awarded to R. D. L. Bligh, of Lakeville, N. S. In addition, Mr. Percie Johnson of St. John's, Newfoundland, awarded two cups for the best judging of dairy cattle to students in the first and second year. The cup awarded to the second year students was won by M. D. MacCharles, Baddeck Bridge, C. B., and the cup awarded the first year class was won by H. A. Butler of St. Johns' Newfoundland.

The Short Course.

The Short Course of January 1913 was attended by 223 students, of whom 155 came from Nova Scotia, 54 from New Brunswick, 3 from Prince Edward Island, 1 from Alberta, 1 from British Columbia and 9 from Newfoundland. Of this number 23 were ladies, who took a special course provided for them.

This report is being written on January 20th, 1914, just after the completion of the 1914 Short Course, at which the total enrolled attendance was 351, the largest in the history of the College.

It has been frequently urged that the main work at the College should be the Long Course and that the Short Courses should be conducted at various centres in the Province so that the education might be carried direct right to the farmer's door. With this contention I largely agree. At the same time it must be recognized that it is impossible to offer as good a Short Course elsewhere in the country as can be offered on the College premises where every facility is offered. With the aid of the grant supplied from Ottawa, it is proposed to carry on a series of Short Courses in various centres of the Province this year. At the same time it is my judgment that it would be a mistake to let these take the place of the more thorough and comprehensive courses which have been annually given at the College.

In conclusion, I may state that in order to give representatives of the Agricultural Societies, in the more distant counties an opportunity to take advantage of the Short Course provided at the College, a grant of $10.00 was given to each Agricultural Society in the Cape Breton Counties and in Antigonish, Guysboro, Halifax, Queens, Shelburne, Yarmouth and Digby Counties. This grant was paid half out of the Federal grant and half from the Local grant. Altogether 53 societies took advantage of the offer.

The Rural Science School.

As in former years, the Rural Science School, conducted by the affiliated Agricultural and Normal Colleges, was in session during July and August, 1913. The enrolled attendance was 107, consisting almost entirely of teachers actively employed in their profession, who took advantage of a part of their vacation to improve their knowledge of science in relation to agriculture and the other industries.

The Federal grant has made it possible to put this school on a better basis and the whole matter of agricultural education in the Common Schools has been improved by the system which was elaborated in 1913. Briefly it consists of the appointment of a Director of Rural Education, L. DeWolfe, B. A., of the appointment of a Principal of the Rural Science School, C. L. Moore, M. A., of rendering financial aid to teachers to attend the School, and of giving grants to teachers who are making an endeavor to teach elementary agriculture and nature study in the schools of the Province. This is fundamental work and is sure to have a far reaching effect upon the young peopla in the schools of Nova Scotia. A full report of this Rural Science School will be found in the Journal of Education.

The Faculty.

Several changes in and additions to the faculty have been made during the year.

Mr. Lionel Stevenson, B. S. A. resigned his position as Professor of Agriculture and Farm Superintendent on June 15th, and was succeeded by J. M. Trueman, B. S. A. Mr. Stevenson occupied his position for one year, during which time he proved an industrious and efficient member of the staff. He is now taking a post graduate course in Animal Nutrition at Illinois University and the whole faculty of the Nova Scotia Agricultural College join in wishing him every success.

J. M. Trueman, who has succeeded to the position of Farm Superintendent is a native of New Brunswick. He graduated some twenty odd years ago from the Nova Scotia School of Agriculture and later completed his under graduate course in Agriculture at Cornell University. Since graduation he has held important positions at Cornell, Illinois and South Dakota Universities and for seven years managed two private farms in the State of Pennsylvania. During the six years prior to his acceptance of his present position in Nova Scotia, Mr. Trueman was Head of the Dairy Division of the Connecticut Agricultural College, at Storrs. His familiarity with Maritime Province conditions, his excellent training and his long experience both in College and in private farm work has prepared him to carry on the duties of his present position with great efficiency.

Dr. Robert Matheson, who for one year occupied the position of Provincial Entomologist and Professor of Zoology at the Nova Scotia College, resigned his position in October last and has been succeeded by W. H.

Brittain, B. S. A., (Macdonald). During Dr. Matheson's year's tenancy of office, he organized the Division of Entomology, had most excellent legislation passed, proved an efficient teacher and published several valuable bulletisn which are referred to in his report to be found in a subsequent part of this publication. He has returned to his Alma Mater, Cornell, to assume an important position as Investigator in Entomology and I have no doubt that his work at this institution will be of a very high order.

W. H. Brittain, who has succeeded to the position of Provincial Entomologist and Professor of Zoology at the College, is a native of New Brunswick and a graduate of Macdonald College, Quebec. Prior to assuming his present duties, he was Provincial Entomologist and Plant Pathologist for the Province ot British Columbia. He has some big problems to deal with in Nova Scotia but I am convinced that his natural ability, his excellent training and his knowledge of local conditions insure very efficient work from him.

During the present winter, Mr. Trueman has had as an Assistant in his Department, H. S. Cunningham, a graduate of the Nova Scotia Agricultural College, who during the summer, was in charge of Demonstration work in Cape Breton.

Mr. Brittain has had as an Assistant, Mr. C. B. Gooderham, a graduate of the Nova Scotia Agricultural College. Miss H. Woodroofe, is acting as my own Assistant in Bacteriology and is also taking charge of the library. I need only say that all of these graduates are carrying on their work splendidly and are a credit to the Nova Scotia Agricultural College.

As in former years, our teaching staff has been supplemented by the services of L. C. Harlow, Professor of Chemistry at the Normal College, E. W. Connolly, Professor of Mathematics at the Normal College, W. R. Campbell, Inspector of Schools for Colchester County, F. G. Mathews, Principal Manual Training School, Truro, J. E. Barteaux, of the Nova Scotia Technical Education staff, J. Standish, V. S., of Ontario, and J. M. S. MacCabe, a Dalhousie College student, who is teaching Mathematics and Bookkeeping. The employment of these men for short periods makes it possible to give a comprehensive course at a very much less cost than if they were permanently engaged. At the same time, the growth of the institution will soon render it necessary to employ men permanently in each of the Departments in which these men have been teaching.

Dominion Aid to Agriculture.

In my report as Secretary for Agriculture, for the present year, and also for the year 1912, I have stated our appreciation of the special grant from Ottawa for the purpose of furthering Agricultural Education in the Province of Nova Scotia. So far as the College is concerned, $10,000 out of the total grant for the year 1913 was used to complete the buildings commenced the previous year and $12,000 was used to meet current expenses of the institution. I think that anyone who compares our present equipment with that of two years ago and who inquires into the character of the work which is being done, will bear tribute to the returns which have been given to the public for this much appreciated assistance received from the Dominion Government at Ottawa.

Buildings.

One new building has been commenced during the year, namely a glass house with head house attached to be used for purposes of entomological and horticultural investigation. The major part of the cost of this has been paid out of the Dominion Appropriation, and the equipment will make it possible to carry on investigation work in Entomology and Horticulture. Also the two new buildings commenced in 1912, namely the extension to the main building and the new Horticultural Building, have been completed. The new buildings have practically doubled our capacity and rendered it possible to accomplish much more satisfactory work than formerly. The whole faculty and student body cannot but appreciate the timely assistance lent the College by the Dominion Appropriation for the Aid of Agriculture in Nova Scotia and it is my firm belief that that part of the appropriation which was spent at Truro is not only permanent in character but will give big returns to the whole Province.

The Dairy Building was completely overhauled during the year and is now a credit to any institution making it possible to carry on much more efficient work than ever before. A reference to the addition and changes in the farm buildings will be found in the report of the Farm Superintendent.

In the report of the Professor of Horticulture, reference is made to the purchase of a thirty-acre property lying east of the College, which is to be devoted exclusively to Horticultural work; and in the report of the Farm Superintendent reference will be found to the purchase

The Annex to Main Building at the Agricultural College, as indicated by marks at base of cut was built during 1912-13, out of funds provided by the Dominion Appropriation for the Aid of Agriculture in Nova Scotia.

Horticultural Building at the Agricultural College, erected 1912-13, and paid for out of the Dominion Appropriation for the Aid of Agriculture in Nova Scotia.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

of 100 acres of pasture land lying about one mile northeast of the College, which will afford a long felt need in the management of the live stock, namely, the supplying of summer pasture.

Further Additions Required.

Each passing year has seen a growth in the Agricultural College and one begins to think that the public will fancy that we can never be satisfied. However, our work is rapidly expanding, the field of investigation is large and much remains to be done before the institution is completed.

There is still an urgent demand for a dormitory, which must some day be constructed for, so far as I am aware, this is the only Agricultural College in Canada, which does not supply dormitory privileges to its students. If it were not that the students are being fairly comfortably housed in the Town of Truro and that there were other more urgent needs, I would strongly insist on this important feature.

To my mind, the most important addition required to the College is the construction of a Chemical Building. At present Chemistry is taught in the Science Building on the Normal College premises and that the teaching part of the has work been efficiently done there will be well attested to by our students; besides, Mr. Harlow, the Chemist, has, at odd hours, done some very valuable investigation work. However, the increased number of students and the demand for comprehensive investigation work makes a special building for this purpose almost imperative. In my judgment, it should be constructed in a modest way at the present time but in such a manner as to be capable of being added to as the institution grows.

I am far from satisfied with the nature of our experimental work, which I still hold, as presented in my Report of 1912, should be affiliated with the work of the Dominion Department of Agriculture so that each department might supplement the other. Since, however, this end seems difficult to attain and possibly does not meet the approval of everyone, I would recommend the appointment of a Provincial Field Crops man, who would carry on some experimental work at the College and institute a comprehensive series of experiments with new crops, new methods of cultivation, etc., throughout the Province

I am also recommending the appointment of a Provincial Plant Pathologist, who shall make a study of plant diseases and more especially the diseases of potatoes, which are shutting us out from the American and West India markets and Black Spot of apples which is doing more to injure our apple trade than any other thing. This Provincial Plant Pathologist, in order to keep in touch with the students, should, like the Provincial Entomologist, give a short course of lectures to the students at the College.

At the first Annual Convention of the Women's Institutes, a resolution was passed urging the establishment of a Domestic Science School. Women seldom fail to get what they ask for and I have no doubt that, in the near future, a building of this kind, which will stand in the same relation of the education of farmers' daughters as our present institution does to farmers' sons, will be erected on the College premises.

There are several other extensions which I feel like recommending but, lest readers may think that we are becoming too extravagant in our demands, I hesitate to urge them.

Conclusion.

1913-14 has been the banner year in the history of the Agricultural College. We have had a record enrolment of students, our buildings have been largely added to and our scope of work has been increased. I wish to convey my thanks to Principal Soloan and his colleagues of the Normal College, and to the Principal of the Truro Manual Training School for the aid they have rendered in our instruction work. I wish also to pay tribute to the members of the College staff every one of whom has done his duty and has contributed much to the success of the institution. To yourself, the Premier, and the members of the Nova Scotia Government, I cannot too highly state my own appreciation as well as that of every member of the faculty for the assistance and advice which you have rendered whenever called upon, and I can only hope that the growth of the Agricultural College, its increasing influence, and the tangible results which have followed the work of the institution may prove a fair return to the citizens of the Province and to the Government which administers its public affairs.

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Principal College of Agriculture.

PART 2—REPORT OF THE PROFESSOR OF BOTANY

Botanical Department, Agricultural College.

Principal Cumming, Secretary for Agriculture,

Sir:—I have the honor to submit the annual report of the Botanical Department.

The instruction was similar to that outlined in my report for last year and included botany, geology and microscopy as well as an oversight of the laboratory work in bacteriology, a general attention to the details of the management of the college, especially in the absence on other duties of the Principal. This requires my presence at the college daily from 8.30 A. M. to nearly 6 P. M. Three evenings per week during the winter I kept the botanical laboratory open for students to work or study. A large number of students took advantage of this although the attendance was voluntary. The classes were so large and our rooms so crowded that it was necessary to teach them in sections which, while advantageous to the student takes much more of the instructor's time.

In June, I visited Cornell University, New York Experiment Station and Macdonald College. I made a careful inspection of those features which might be of use here and gained many useful suggestions for my work. Every facility was offered me at these institutions to make my stay as profitable as possible and I appreciate the invariable kindness and courtesy as well as assistance given me.

The season in Nova Scotia was exceptionally free from outbreaks of serious plant diseases. I can recall no year so free from them. There were no serious outbreaks except the scab on apples and that mysterious trouble called bitter pit, in apples, club root in turnips and the bunt of wheat. In this report I am giving some information in regard to

(1) Bitter Pit,

(2) Scab on Apples,

(3) Bunt of Wheat,

(4) Spraying Weeds with Copper Sulphate (Blue vitriol),

(5) Club-root of Cabbage, Turnip, etc.

Bitter Pit.

The cause of this trouble is not known. It rendered worthless considerable fruit this year and the loss fell heavily upon the consumer. Besides the direct loss to the orchardist there must be considerable due to lessening the consumption.

The surface of the affected apples become slightly indented and on opening one of these there is found underneath the skin brown dead flesh of about the area of the depression but extending towards the center for some distance or to the center of the apple. The surrounding flesh, while appearing good and healthy is intensely bitter and disagreeable. The death of the tissues of the fruit always extends rapidly towards the center but slowly in other directions making a slender cone or cylinder of dead material which is drier than the surrounding flesh and darker in color. Often the color and about the consistency of the darker commercial sponges.

Apple Scab.

The very serious outbreak of this disease during the past season calls for a thorough discussion of the subject. Because the seasons in recent years had been unfavorable for the scab and unsprayed fruit not seriously injured, this disease was often considered as easily controlled, and that all that was necessary was to spray, without much regard as the spray used or when applied.

Life History.—Some points in the life history of this fungus is not known but the main features are. In late autumn the leaves and fruit bearing the accumulated "Scabs" of the season, fall to the ground. Although the leaves are dead and the fruit decays the fungus in them does not die but begins an active growth on the dead material during which it becomes filled with nutriment. It at the same time forms swollen bodies which project slightly above the skin of the old leaf. They are called perithecia. In these, during the winter and early spring, there developes sack-like bodies containing spores (Ascospores). The ascospores are mature about the time the trees are in bloom, some a little before and some after blossoming. The time during which they are being shed would probably extend over a month. As the same conditions that bring the trees in bloom also mature the spores it is safe to assume that in general the spores do not mature till about a week before blossoming and that they continue to be shed during the month following. These ascospores are the beginning of the disease on the leaves, flowers and fruit in spring each year. Dry weather retards and prevents the spores escaping, while wet weather, especially mists, showers, and a prolonged wet spell favor the escape of the spores and their growth. How the spores reach the leaves and blossoms is not known but there is no lack of evidence that they do.

It is evident from the foregoing that if care were taken throughout a large area to destory all affected leaves and fruit in autumn it would control this disease, providing it is not carried through on twigs, or that it had no unknown host. But if one fruitgrower in the neighborhood neglected to destroy or if there were wild, roadside or neglected orchards, then such destruction would not be efficient as the spores are very light and could be carried some distance by wind and other agents.

If we examine the tree just before it blossoms, we will find that only the blossom (Fruit) buds are unfolded and hence these are most likely to be attacked. This is what happens. The spore may fall on either the blossom or a leaf of the blossom bud. It may attack either the stem, fruit, leafstalk or blade. If the fruit bud or its stem is attacked sooner or later that blossom or young fruit dies and falls off. If it attacks the leaf stalk, the leaf may fall. If the blade it is usually on the exposed i. e. the under side of the leaf.

When the spore (Ascospore) falls on the leaf or flower and is kept moist for some hours it grows into a slender body which penetrates the leaf or other part and grows inside the part for about two weeks when it has attained such a size that it bursts the skin at that point and causes a "Spot" or "Scab" small at first but which may continue to grow throughout the season. From this it will be seen that the scabs appear about two weeks after the attack. No method of killing these scabs is known after they are formed. The purpose of spraying is to prevent their formation by preventing the spores from growing.

In order for spraying to be efficient it is essential that the spray shall be on the leaf before the spore is; that it shall not wash off; that it shall always liberate a small but sufficient amount of a poison with every rain and dew so that whenever there is a drop of water on the leaf it shall contain sufficient poison to kill the spore. It is not necessary that the spray mixture shall cover every part of the leaf but that it shall be well enough distributed so that when a drop of water forms it will come in contact with it. Unless this is assured the spraying is useless.

The spores escape and grow best in continued wet weather, Hence it is important that the poison shall not be readily washed away or it will lose its strength and when the rain is over the remaining drops be quite free from poison. It is in this way that Bordeaux mixture is so efficient. The longer it is exposed to water the more soluble it becomes while the least trace of it is sufficient to prevent the growth of spores. It is admirably adapted to our very moist climate.

As soon as the scabs appear in the spring, which is usually shortly after the "Blossoms" fall, they (the scabs) begin to produce summer spores, conidia. These conidia are shed in abundance, indeed the appearance of the scab is due to the conidia accumulating and breaking or destroying the skin and thus producing the scab. A scab may continue to produce these conidia for a long time. They fall upon the foliage and fruit and if sufficient moisture is present, grow, penetrate the leaf and form a fresh scab. In this way a single scab with favorable weather conditions may give rise to many more scabs in the course of ten days to two weeks or longer thereafter, depending on conditions. This continues throughout the season. The fruit and leaves become more or less covered with spot depending on the weather and the situation of the orchard.

During June and July the leaves are growing rapidly larger and throughout the season the fruit is also increasing in size so that a spraying which has sufficiently covered these will soon require repeating to provide for the new growth. This is particularly true in wet weather. It is evident, then, to have the spraying most efficient it should be done before rather than after a wet spell. Keep the trees sprayed when it is dry so that the spray will be in place when the rains come.

To summarize the life history:—

1. During autumn, winter and early spring the scab fungus is growing in the old scab spots on the dead leaves and fruit.

2. Ascospores mature as the fruit buds unfold.

3. Ascospores shed with the wet spells or rains following their maturity.

4. Ascospores germinate and penetrate the wet leaves, leaf-stalk, blossom-buds and their stalks.

5. Fungus grows and in about ten days or two weeks, shortly after blossoms fall the first young scabs appear.

6. The scabs produce conidia which in turn grow and produce scabs and this continues through the season.

The important points in the control of this disease are:—

1. To bury, burn or otherwise destroy all old leaves in autumn or early spring.

2. To spray with an efficient mixture just as the fruit buds unfold.

3. To repeat the spray as soon as the blossoms fall.

4. To repeat the spraying as often as necessary so that the growing leaves and fruit shall be covered with spray whenever a rain or wet spell of weather occurs.

NOTE—The part played by the scabs which occur occasionally upon the twigs has not been fully worked out. nor the method of distribution of the ascospores nor any method of scab destruction for the growing scabs.

Bunt In Wheat.

I regret to report that in spite of our effrots to exterminate bunt from this province, complaints still arise that the disease is not controlled. I therefore wish to direct attention to certain precautions. If the disease has been on a farm it may remain in the barn, grain bins and seeder for years. It has not been demonstrated how long the spores of this bunt will live. Hence, it is of the utmost importance that where the disease occurs the farmer should not only get clean seed but that on account of the liability of his seeds becoming infected from the bags or by coming in contact with the spores around his buildings that he should also treat such seed and sow just as soon as it is dry enough to work with, not waiting till it is thoroughly dry, i. e., treat the seed in the morning and sow the same day, that it would be best to treat the seed in the field or out of doors and in no case in the barn in which previously affected crops had been stored. With such practice and with care in cleaning the barn before the grain is drawn in the disease should be controlled.

The practice of regularly treating the seed should be maintained annually for a number of years upon those farms which have become infected with bunt.

Treatment.

Add one pint of formalin to forty gallons of water. Into this solution dip the grains, preferably in coarse bags or baskets till thoroughly wet with the solution then place on a board or table so that the excess of solution will run back into the original solution and then set aside for two hours or longer. After this the grain may be emptied into a clean open shallow box and gradually dried. It should be moist with the formalin not less than six hours nor longer than twelve hours and then stirred or poured over in the wind or through a clean fanning mill till dry enough to sow and sown immediately after.

Farms badly affected with this disease should omit wheat from the crops for two years at least.

Never use seed from crops affected with bunt as it is almost impossible to remove all bunt affected grains and such are liable to break and infect the treated grain during drying or sowing.

Use only clean seed and treat it with formalin solution if bunt occurred in the previous year's crops. Be sure to treat seed bought from the trade, for it is very liable to be affected with this smut.

An Experiment upon Killing Weeds with a Solution of Copper Sulphate with Special Reference to Cadlock Wild Radish.

Wild radish is a bad weed and any method of exterminating it would be of value to our farmers. The following experiments are partly a repetition on a larger scale of work done in former years. A field of late sown oats and smaller fields of grain were used. These, besides a field on the College farm were properties of Mr. H. Blair, Mr. Morrison and Hon. Davidson Hill, Onslow.

The spray used in each case was a solution of copper sulphate, blue vitriol, always of approximately three per cent solution. This was prepared by using by using three pounds of Copper Sulphate to ten gallons (100 pounds) of water. For convenience, the vitriol is dissolved in a gallon or two of water, preferably hot water, by suspending it over the surface of the water in a wooden pail and to this is added the required amount of water when it is ready for use. The solution is easily applied and does not clog the spray pump. It is important that the spray pump distributes the spray evenly and as near the ground and plants as possible so that wind does not interfere. I used a very satisfactory pump made by Mr. Westhaver, Mahone Bay. It is desirable that all the nozzles in this machine be the direct nozzles and not alternately direct and side nozzles as used for potatoes. The change is easily made. By driving slowly, two barrels of solution can be applied per acre. Some machines, especially some using horse power to run the pump apply too little spray. With these it is necessary to repeat the spray till the required amount is applied.

After repeated trials it was found that one and one half barrels of the three percent solution of copper sulphate when applied on a dry day which was not followed by rain within twenty-four hours killed the cadlock.

The plants began to die on the parts in contact with the spray and then the stalk and lastly the roots. Plants receiving sufficient spray to kill the leaves invariably died. Rarely when a young plant which was shaded so as to be slightly injured would later branch near the base, but usually made feeble growth. The copper sulphate was in some way absorbed by the plant and poisoned it.

When rain fell during the night following the application, only a part of the weeds were killed but it was easy to distinguish such sprayed plots to the end of the season by the fewer cadlock plants and deeper green of the grain plants.

The Amount to Apply.

The grain was not noticeably injured by an application of two and one-half barrels per acre, but heavier applications did apparent injury. Less than one barrel to the acre did not kill the weeds, although it caused a deeper green in the grain plants, but when one and one-half barrels per acre were used, the cadlock was effectively killed, in every case, even when the plants were in full bloom.

The Best Time to Apply in the Age of the Plant.

It is always efficient when applied; no matter what the age of the plant, but the smaller the plants the less spray is required to kill them. The longer the grain grows without the interference of the weeds, the better the yield. The plots sprayed when the weeds were only small with three to five leaves, were remarkably free from weeds of all kinds during the entire season. A few seeds sprouted and grew after the spraying was finished but these could be pulled by hand for a few cents per acre and thus secure a clean crop of grain.

The Influence on the Grain.

The spray invariably caused the oats to assume a deeper green, even when washed off by rain in a few hours after being applied. But this deeper color was more marked the earlier the spray was applied in the life of the crop and it cotinued not only in the growing crop but was noticeable in the straw after the grain was ripe. Not only did the crop have a deeper green but it was more vigorous, grew better and gave a larger yield. Whether this was due to the freedom from weeds or to the direct action of the copper sulphate upon the grain or both was not determined. The difference in appearance was so marked that the sprayed plots could be picked out a long way from the field.

In one instance at the time of ripening, I took a measured plot from the sprayed strip which was sprayed when the weeds and grain nicely covered the ground, the weeds with three or four leaves each when sprayed, and an equal plot from the unsprayed adjoining plot. The yields were as follows, the figures being reduced to parts per hundred:—

Sprayed plot.	Yield of grain	94 4-5 per cent.
	Yield of weeds	5 3-5 per cent.
Unsprayed Plot	Yield of grain	71 1-2 per cent.
	Yield of weeds	28 1-2 per cent.

The sprayed plot yielded one seventh more grain and straw than the unsprayed.

This spray, including the cost of applying, will amount to from two to three dollars per acre varying with the cost of material and labor.

Club Root of Cabbage, Turnip and Other Cruciferae.

This serious disease is rapidly increasing in our Province. Many of the outbreaks can only be accounted for on the assumption that the seed used had been grown on affected soil and that the spores of the disease accompanied the seed.

The disease is produced by a low form of fungus. This fungus can live in the soil for years either as spores or growing on the remains of plants till it comes in contact with the roots of living plants of the Mustard family including such common weeds as shepherd's purse, when it penetrates the roots and causes the deformity known as club root. It is thus upon the dead remains of plants and the weeds of the mustard family that it feeds from the growing of one cabbage or turnip crop till the next cruciferous crop is grown. Although so common a disease its life history is not fully known nor are methods for its control.

The appearance of the disease is quite characteristic. Whenever the roots of cabbage, cauliflower, kohl rabi, turnip, shepherd purse, or any of the plants or weeds of the mustard family grow deformed with swollen places on the smaller roots or the main tap root instead of developing normally divides into a number of parts with swollen places along these parts, or where the main root is small and woody with swellings on the fibrous roots or where any of the above conditions prevail and some of the apparently fully grown turnip roots are attacked in the field with a rapid soft decay this disease is probably the cause. There is at least one exception.

I have had this disease reported to me by farmers in a few cases where upon investigation the trouble, while having a resemblance to club root was not due to it, but to some other cause, possibly crown gall. The swellings in these cases were round and often appeared as projections from the main root, but only a microscopic examination could demonstrate that it was not club root.

When this disease occurs upon the farm the following precautions should be taken:—

(1) Care that the soil from the field bearing the affected crop is not carried to other parts of the farm on tools or carts nor washed by rains to other fields.

I saw a field on which turnips had not been grown for many years where every low place in the field had diseased turnips. The previous year a diseased crop grew on a field a little higher than this one and unusual floods had washed the soil down into the low places and thus carried the disease.

(2) Do not let cruciferous crops follow one another when there is any indication of the disease.

(3) Destroy all weeds of the mustard family. For methods see another part of this report.

(4) Gather and boil or burn all affected plants.

(5) Apply a large dressing of quick lime, water slaked, to the soil. Use about one or two thousand pounds per acre.

H. W. SMITH.

PART 3—REPORT OF PROVINCIAL ENTOMOLOGIST AND PROFESSOR OF ZOOLOGY.

M. Cumming, Esq., Secretary for Agriculture,

Sir:—I beg to submit my report for the portion of the year which I have served as Professor of Zoology and Entomology in the Nova Scotia Agricultural College and as Provincial Entomologist. I entered on the duties of my office on October 15th and spent two days going over the work of the Department with my predecessor, Dr. Matheson. Though Dr. Matheson had only held the position of Provincial Entomologist for one year, the work of the Department was so well under way and so thoroughly organized that there was no difficulty in taking it up where he left off. Since his departure my time has been taken up with gaining an intimate knowledge of the work of the department, planning for next year's experiments, and in the teaching work of the College.

Coming as I did so late in the year, the major part of last season's work was performed by Dr. Matheson whose report is appended in full. It will be seen from his report that the work of the department is mainly of three kinds,—teaching, investigation and inspection.

In order to carry out the provisions of the Injurious Insect Pest and Plant Disease Act, 1911, and the regulations issued thereunder, a fumigation house has been erected at Truro and one at Digby, where all nursery stock arriving from other provinces can be inspected and fumigated. Arrangements have now been completed to double the capacity of our house at Truro and, in addition, to erect an inspection shed, where all stock can be carefully and systematiccally inspected before fumigation. By these methods we hope to render it impossible for such pests as the San Jose′ Scale to enter the province from other parts of the Dominion. This work combined with the summer inspection of all newly planted trees should be the means of saving our fruit growers an immense amount of loss from this destructive pest.

The fact that six trees coming from New York State bore living scale, even after having been fumigated by the Dominion Authorities, is, however a matter of concern. As we are assured that the fumigation was well and carefully done, it seems advisable that the efficacy of fumigation for killing scale under all circumstances, be thoroughly investigated.

Respectfully submitted,

WILLIAM H. BRITTAIN.

M. Cumming, Esq., Secretary for Agriculture.

Sir:—I beg to submit my second report of the Department of Zoology and Entomology of the Nova Scotia Agricultural College and my first report as Provincial Entomologist. I desire to divide my report into three parts:—(1) General; (2) Brown-tail Moth Report; (3) San Jose′ Scale Report.

General.

During the past year the activities of this department have been largely devoted to teaching work in the College; active participation in the Brown-tail Moth campaign; organization and carrying through the San Jose′ Scale inspection; the study and rearing of a large number of the common injurious insect pests; the preparation of a series of life-histories of our common insects for educational purposes; besides taking care of a large correspondence dealing with our new regulations as well as answering numerous inquiries as to the control of injurious insects. The following bulletins have been prepared, one of which has been issued and the others will shortly be out of the hands of the printers:—

San Jose′ Scale Situation in Nova Scotia, a bulletin of information, Bulletin No. 3.

The Injurious Insect Pest and Plant Disease Act, 1911; and the regulations issued thereunder, Bulletin No. 4.

The Brown-tail and Gypsy Moths, Bulletin No. 5.

Beside these a number of articles have been contributed from time to time to the local press.

Early in the spring arrangements were made to carry on some demonstration spraying in Pictou County in the control of the codling moth. Owing to severe frosts during the blossoming period this work had to be abandoned.

The Oyster Shell Scale is one of the worst pests of the apple in Nova Scotia and a series of test sprays have been started and should be continued. Particular attention was directed to the use of lime-sulphur as a dormant spray against this scale. This work needs to be continued through several years in order to secure definite results. Work was also begun on the life-histories of the apple Aphids but owing to pressure of other work not much progress has been made. The various species of plant lice attacking apple in some years do great damage and this work ought to be prosecuted.

In order to study the various pests of the apple in the field, arrangements have been completed through the kindness of Mr. H. J. Grisdale, Director Dominion Experimental Farms, Ottawa, and Professor Saxby Blair, Superintendent Kentville Experimental Station, to establish a field laboratory at the Experimental Station at Kentville. It is to be hoped that this laboratory can be equipped and opened early in the spring of 1914. In this way we hope to come in more direct contact with the fruit growers and study field conditions more closely.

During the past season various species of wireworms have caused great damage to the truck gardens in and around Halifax. Constant inquiries have reached me regarding these pests. Unfortunately, though a large amount of experimental work has been done, no satisfactory control measures have been devised. A thorough study of the species known to occur in Nova Scotia should be undertaken at an early date and an earnest effort should be put forth to discover some means of control.

The Tent Caterpillars (*Malacsoma americana* and *M: disstria*) did considerable damage in certain sections of the western portion of the province. However, these pests are soon brought under control by their natural enemies and next year we may anticipate very little damage.

In imported early apples from Ontario I found many specimens of the Apple Maggot (*Rhagoletis pomonella*). As culls and partially decayed fruit are so often discarded, I issued a warning regarding this pest through the local papers. On July 25, 1913, I was informed through the secretary of the United Fruit Companies, Berwick, that there was reported an infestation of this pest in and around Jordantown, Digby County. A thorough inspection of the district from Bear River west has been made and the apple maggot found quite generally distributed. We were delayed in this inspection owing to the pressure of the San Jose′ inspection.

The Spruce Budworm (*Tortrix funiferana*) was very abundant around Truro and in many other sections of the province. It did considerable damage and next year we may expect a considerable increase in the work of this pest. Owing to the other work of the Department and our restricted space, it has not been possible to do more than some general life history work with this pest. Next year this work should be taken up and considerable attention given to it owing to the importance of our coniferous forests.

During the past year the increase of the Brown-tail moth has been considerable. This will be shown more fully in the Brown-tail Moth report which is appended. The Gypsy Moth (*Porthetria dispar Linn.*) one of the most dreaded pests introduced into the United States from Europe is rapidly approaching our borders. It has reached Desert Island and Orono, Maine, points within seventy miles of the New Brunswick border. Our danger at present lies in the introduction of the egg masses of this pest. This may occur on settlers effects coming into our province, as several infestations in the New England States have been traced to people moving from one section to another. Also infestation may occur through the return of boxes, bags, berry and chicken crates, etc., which have been used in the export of garden truck to infested districts. These are often left exposed in the infested districts and their return should be prohibited or they should be carefully examined before being allowed to enter any of our ports. All baggage, settlers' effects, etc., should be carefully examined on arriving at our ports for the escape of a single egg mass would mean the introduction of this dreaded pest.

Before concluding I wish to thank Mr. C. B. Gooderham, my assistant for his constant attention to the work of rearing insects, the preparation of demonstration material, and the collection of insects for class use. I desire also to thank Miss V. Tarris for her constant help with the work of the department.

Brown-tail Moth Report.

(Submitted May 30, 1913.)

The following is the report on the Brown-tail Moth work during the past season (1912-1913). In accordance with a previous agreement, the field work has been directly in charge of Dr. C. Gordon Hewitt, Dominion Entomologist, of the Dominion Department of Agriculture, Ottawa. Mr. G. E. Sanders, Assistant, Division of Entomology, Ottawa, was in charge of the field party. The field party consisted of eight men, Messrs. G. E. Sanders, in charge, F. C. Gilliatt, S. H. Payne, C. E. Chute, H. G. Payne, H. R. Brown, A. Kelsall and J. C. Shipton. The latter four men were engaged and paid by the province but, according to agreement, were directly under Mr. G. E. Sanders. The eight men were divided into field parties of two or three each and placed from time to time by Mr. Sanders in various parts of the infested district.

The active field work began in November (Nov. 6th) when Mr. Sanders made a general survey of the worst infested districts, Middleton, Nictaux, Wilmot. Lawrencetown, Williamston, Bridgetown, Annapolis and Weymouth. The following week three field parties of two each were actively at work, one each in Bear River, Bridgetown and Weymouth. As a result of Mr. Sanders' continued inspection he reported a general decrease in all districts. Unfortunately this prediction proved incorrect as shown by the results of the season's work.

At first the work was so arranged as to secure the greatest possible number of nests in the badly infested districts (Weymouth East to the Kings County line). This was done in order to avoid the so-called "winter drop." By "winter drop" is meant that some nests are gradually broken off by the high winds and storms. Mr. Sanders estimates this as high as 5 per cent, a rather high percentage, I am inclined to believe.

This work was continued until December 7th when the parties were re-arranged by Mr. Sanders. Up to this time 6353 nests had been taken in the following places:—

Bear River	3265
Bridgetown	551
Paradise	458
Lawrencetown	653
Weymouth	367
Deep Brook	260
Smith's Cove	355
Southville	3
Barton	11
Jordantown	2
Annapolis	312
Round Hill	12
Williamston	55
Brickton	49

Thus in less than four weeks, more than half of the total number of nests were taken by practically three parties of two each as Mr. H. G. Payne and Mr. G. E. Sanders were engaged in other work for the greater part of that time.

On December 9th, Messrs. Brown and Kelsall were sent to Yarmouth and they spent the next two months inspecting portions of Shelburne County, Yarmouth County and that portion of Digby County west of Weymouth. In this district only eleven nests were taken.

Hilltown	2
Cheticamp	2
Saulnierville	1
Meteghan River	1
Meteghan Station	1
Blackadars	1
Deerfield	1
Pleasant Lake	1
Tusket	1

As may be noted this shows a considerable reduction over the number of nests taken during previous years. Only one new infestation (Blackadars) occured while several (7) places in Yarmouth County in which nests were found the previous year were reported clean.

From December 9th to December 21st 1499 nests were taken by two parties at the following places:—

Deep Brook	471
Waldeck	15
Clementsport	14
Annapolis	170
Middleton	64
Nictaux	157
Spa Springs	141
Wilmot	134
Round Hill	325
Upper Clements	7

On December 26th Messrs. Gilliatt and Chute were sent to Windsor. Messrs. S. H. Payne and Shipton inspected Mochelle reporting 110 nests as the result of two days work (Dec. 26-27). On December 30th Messrs. S. H. Payne and Shipton were sent to Canning and now two parties of two each were located in the most easterly end of the infested district. On January 6th Mr. Gilliatt was shifted from Hantsport to Join Mr. H. G. Payne in Annapolis while Mr. Sanders moved to Hantsport and joined the active field force. The field parties were now distributed as follows:—

Messrs. Brown and Kelsall in Yarmouth County,

Messrs. H. G. Payne and F. C. Gilliatt at Round Hill.

Messrs. H. S. Payne and J. C. Shipton around Canning,

Messrs. G. E. Sanders and C. E. Chute at Hantsport.

It will thus be seen that two parties of two each were then at work in eastern Kings County, one in Yarmouth County while but one party was at work in the badly infested district between Annapolis and Brickton. From January

6th to March 1st, Messrs. H. G. Payne and Gilliatt took 1231 nests in the following places, most of which had been worked earlier in the season:—

Annapolis	1
Mochelle	118
Round Hill	428
Tupperville	15
Bridgetown	574
Spa Springs	2
Nictaux	1
Middleton	7
Paradise	22
Lawrencetown	34
Williamston	7
Brickton	2
Clarence	19

During this time the two eastern parties gradually worked westward, joining at Waterville on January 27th. From January 27th to March 1st these two parties gradually covered the western section of Kings County reporting 166 nests at the following places:—

Kingston Station	33
South Farmington	42
Kingston	2
Aylesford	25
Auburn	36
Melvern Square	24
Berwick	2
Woodville	1
Sheffield Mills	1

During this time Messrs. Brown and Kelsall gradually worked eastward reaching Digby and that vicinity during the week ending March 1st and reporting the following nests:—

Weymouth	81
Barton	3
Gilbert's Cove	2
Brighton	1
Point Prim	2
Marshalltown	1
Digby (town)	3

On March 3rd another shift was made in all the field parties. Mr. J. C. Shipton was sent to inspect the territory along the D. A. R. between Windsor and Truro, thence along the I. R. C. to Amherst, Parsboro and various points. This occupied four weeks time and no nests were found. Mr. F. C. Gilliatt spent the next four weeks (March 3rd to April 5th) inspecting along the H. & S. W. between Middleton and Bridgewater thence to Halifax and along the I. R. C. to Truro. He reported no nests. Messrs. G. E. Sanders, H. R. Brown, A. Relszall and S. H. Payne moved to Bear River and vicinity where they worked for the next five weeks reporting 978 nests in the following places:—

Smith's Cove	67
Bear River	821
Hessian Line	3
Waldeck	1
Clementsport	1
Deep Brook	85

During this time Messrs. H. G. Payne and C. E. Chute spent two weeks working west from Bridgetown along the north side of Annapolis River and Basin to Victoria Beach, reporting 31 nests in the following places:—

Beaconsfield	1
Bridgetown	4
Clarence	6
Belle Isle	19
Granville Centre	1

On March 25th they moved to Middleton thence to Mount Hanly and during nearly all the three following weeks made a long tramp south of the South Mountain touching at the following small settlements, Albany, Albany Cross, Inglisville, Beals Mountain, Birchtown, Princedale and Virginia. They also worked into Annapolis town reporting 24 nests, 1 at Lake La Rose, 21 at Lequille and 2 in Annapolis town. These nests were thus all secured within a few miles of Annapolis town, in districts which had previously been inspected.

From April 7th to the close of the season's work (May 3rd) all the parties worked in the district from Weymouth east as far as the known infested areas of West Kings County. Messrs. H. G. Payne and Chute spent one week of this time (April 5th to 12th) on the trip south of the South Mountain already mentioned. Mr. S. H Payne spent three days (April 22nd to 24th) at Annapolis and Wolfville inspecting nursery shipments and left the work on April 27th. Messrs. Brown and Kelsall quit work on April 30th. Two helpers, Messrs. A. E. Hunt and A. Baker, aided in the work during the last two weeks (April 22nd to May 3rd). During this period (April 7th to May 3rd) 532 nests were taken at the following localities:

Clementsport	1
Annapolis	2
Nictaux	26
Wilmot	36
Middleton	8
Spa Springs	18
South Farmington	16
Mochelle	106
Round Hill	62
Weymouth	12
Smith's Cove	7
North Williamston	1
Williamston	22
Bridgetown	101
Centrelea	2
Deep Brook	28
Bear River	35
Kingston	1
Aylesford	3
Auburn	1
Lawrencetown	12
Paradise	32
Auburn	1

Thus during the last four weeks work an average of 133 nests per week was taken in the main district which has always been badly infested.

Tht total number of nests obtained was 11,054 taken at the following places; previous years are shown for comparison:—

Yarmouth County.

	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Bloomfield	....	....	....	1	....	....
Brooklyn	....	....	....	....	2	....
Carleton	....	....	....	5	....	....
Cheggoggin	....	....	....	....	1	....
Clelands Corner	....	....	....	....	1	....
Deerfield	....	....	....	1	....	1
Hebron	....	....	....	1	2	....
Lake George	....	....	....	1	....	....
Ohio	....	....	....	1	1	....
Pleasant Valley	....	....	....	....	4	....
Plympton	....	....	....	2	....	....
Tusket	....	....	....	....	....	1
Yarmouth	....	....	....	....	3	....
Pleasant Lake	....	....	....	....	....	1
				12	14	3

Digby County.

	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Acaciaville	....	....	....	2	....	....
Acacia Valley	....	....	....	1	3	....
Ashmore	....	....	....	1	....	....
Barton	....	....	....	18	34	14
Bear River	....	....	390	613	2317	4121
Beaver River	....	....	....	1	....	....
Blackadars	....	....	....	....	....	1
Bloomfield	....	....	....	1	....	....
Brighton	....	....	....	2	12	1
Cheticamp	....	....	....	....	....	2
Church Point	....	....	....	1	1	....
Concession	....	....	....	1	1	....
Danvers	....	....	....	17	....	....
Fort Point	....	....	....	2	....	....
Digby	....	....	....	3	....	5
Gilbert's Cove	....	....	....	2	....	2
Hassett	....	....	....	1	3	....
Hilltown	....	....	....	16	2	2
Jordantown	....	....	....	....	41	2
Lower Saulnierville	....	....	....	2	....	....
Lower Meteghan	....	....	....	1	....	....
Melanson Sett	....	....	....	6	4	....
Meteghan	....	....	....	1	3	1
Meteghan River	....	....	....	3	8	1
Marshalltown	....	....	....	1	....	1
New Edinburg	....	....	....	....	1	1
Plympton	....	....	....	....	2	....
Point Prim	....	....	....	....	....	2
Riverdale	....	....	....	3	....	....
Saulnierville	....	....	....	....	3	1
Sissibou Falls	....	....	....	1	....	....
Sissibou River	....	....	....	....	15	....
Smith's Cove	....	....	24	18	238	429
South Range	....	....	....	29	15	....
Southville	....	....	....	643	69	3
Weymouth	....	....	....	1511	190	475
Weymouth Mills	....	....	....	....	325	....
Weaver's Settlement	....	....	....	....	4	....
Woodstock	....	....	....	1	1	....
	....	....	414	2903	3321	5064

Annapolis County.

	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Annapolis	....	....	....	1	178	485
Bridgetown	....	....	344	619	1368	1235
Beaconsfield	....	....	....	....	....	1
Belle Isle	....	....	....	....	1	19
Brickton	....	....	....	3	19	51
Carleton Corner	....	....	....	234	....	....
Clarence	....	....	....	....	....	25
Centrelea	....	....	....	....	....	2
Clementsport	....	....	5	....	8	16
Clementsvale	....	....	....	1	1	....
Deep Brook	....	....	417	118	632	844
Forest Glen	....	....	....	1	....	....
Granville Centre	....	....	....	1	....	1
Granville Ferry	....	....	....	....	1	....
Granville Lower	....	....	....	1	....	....
Hampton	....	....	....	1	....	....
Hessian Line	....	....	....	....	....	3
Lawrencetown	....	....	14	8	257	699
Lake La Rose	....	....	....	....	1	1
Lequille	....	....	1	108	133	21
Middleton	....	....	40	20	106	79
Mochelle	....	....	....	7	169	334
Melvern Sq	....	....	....	....	2	24
Nictaux	....	....	235	18	248	185
North Williamston	....	....	....	....	....	1
Paradise	....	....	8	11	221	514
Power Lot	....	....	....	....	1	....
Round Hill	....	....	3	268	564	827
Spa Springs	....	....	....	....	253	162
South Farmington	....	....	....	....	6	58
South Wilmot	....	....	....	....	2	....
Tupperville	....	....	....	1	19	15
Upper Clements	....	....	....	2	....	...7
Upper Granville	....	....	....	....	2	2
Waldeck	....	....	....	....	7	16
Waddeck West	....	....	2	....	....	....
West Paradise	....	....	....	12	....	2
Wilmot	....	....	....	10	5	170
Williamston	....	....	....	....	139	84
Victoria Vale	....	....	....	....	1	....
	....	....	1070	1445	4334	5882

Kings County.

	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Aylesford	....	....	....	....	....	28
Auburn	....	....	....	....	17	37
Berwick	....	....	....	....	....	2
Cambridge	....	....	....	....	3	....
Kingston	....	....	....	....	13	3
Kingston Station	....	....	....	....	4	33
North Kingston	....	....	....	2	....	....
South Waterville	....	....	....	....	1	....
Sheffield Mills	....	....	....	....	....	1
Woodville	....	....	....	....	....	1
	....	....	....	2	38	105

Hants County.

	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Falmouth	....	....	....	....	....	1

Totals for Counties.

	1906-'07	1907-'08	1908-'09	1909-'10	1910-'11	1911-'12	1912-'13
Yarmouth	....	....	....	....	12	14	3
Digby	....	....	....	144	2903	3321	5064
Annapolis	....	....	....	1082	1445	4334	5882
Kings	....	....	....	....	2	38	105
Hants	....	....	....	....	....	....	1
	6000	4000	800	1496	4362	7707	11054

From the foregoing it will be seen that the number of nests obtained is considerably greater than that of the last season. In Yarmouth County a marked reduction has taken place. However, the infestation has been always slight and widespread in this county. In Digby County there is a fifty per cent increase. This increase is due almost entirely to the condition in Bear River and Smith's Cove as in many other places there is considerable reduction. In Annapolis County there is over 33 per cent increase, an increase rather widely scattered. In a few localities a marked decrease may be noted while in others the increase is very considerable. In Kings County the increase is very marked. The infestation appears to be spreading rapidly eastward from the badly infested districts in Annapolis County.

In considering the work for the coming year the following recommendations should be urged. I do not think that any more inspectors are required unless it is found necessary to collect all the nests early in the season on account of the so-called "winter drop." The inspectors should be kept more strictly within the infested district and changing of field parties should be avoided as far as possible. In this way more time could be devoted to the badly infested district between Annapolis and infested areas in Kings County, a district in which there are many old gnarled orchards, many of them poorly cared for and here the pest is at present numerous and widespread. The scouting work might be considerably reduced and what seems necessary carried on by the officer in charge of the field work. It should be pointed out that during the past year the officer (Mr. Sanders) in charge has largely devoted his efforts to experimental and general scouting work as well as directing the activities of the field parties. In the future all the scouting work might be done by him at odd times and thus avoid breaking up a permanent field party. If these recommendations are faithfully carried out, I feel confident that the Brown-tail moth can be kept under control and the infested area gradually reduced.

San Jose' Scale Report.

The following is the report on the San Jose' Scale inspection work during the season just closed:—

The plan adopted at the beginning of the season was to inspect every orchard from Windsor as far west as Digby. If this area could be thoroughly inspected before the end of September, I proposed to place the inspectors in Hants County and work east along the D. A. R. lines into Halifax and Colchester Counties. This plan under the well organized field work of Mr. H. G. Payne has been carried out very successfully. The inspectors are now clearing up the fruit sections of Hants County and then will return and reinspect all doubtful places where dead scale was located during the season.

In order to secure full data as well as accurate information on which ,future recommendations could be based, I had our inspectors visit every place throughout the district inspected and secure answers to the following questions:—

Name? Address? Origin of stock? Trees destroyed, 1910, '11, '12, '13? Number inspected? Acres in Orchard? Do you spray? Cultivation? Conditions and general remarks?

Nearly everyone seemed anxious to aid in the work and we found no difficulty in securing the information asked. A summary of the results will be found at the end of this report.

On June 2, 1913 the work began with six inspectors in the field in charge of Mr. H. G. Payne,—Messrs. Gilliatt and McMahon at Windsor; H. G. Payne and Dustan at Hantsport; and Shipton and Crooker at Wolfville. On June 16th Mr. Kelsall joined us and on July 2nd, Messrs. S. H. Payne and Munro were added to our force. Thus at the beginning of July we had four parties of two each in charge of Mr. H. G. Payne. Mr. H. G. Payne's work consisted of arranging the parties in the field so as to prevent overlapping and at the same time avoid missing any orchards; seeing that the inspectors did thorough and conscientious work; compiling and forwarding to me weekly reports; and securing the support and co-operation of the people visited by our inspectors. Mr. Payne did his work well and thoroughly. I have heard no complaints and no criticisms. The inspectors worked earnestly, conscientiously and each one took a personal interest not only in securing the sympathy and support of the people amongst whom they worked but also in imparting information regarding injurious insects and pointing out how the Department of Agriculture was endeavoring to aid in every way possible to upbuild the fruit and farming industries. Ours was not only an inspection but also an educational campaign of the best sort. I desire to thank each of the inspectors for their painstaking work and certainly the fruit growers and every person in our province owe them a debt of gratitude.

During the summer of 1912 this same area was inspected but not in such a systematic manner. The results of that inspection are here given for comparison with those of the season just closed.

Results of Season's 1912 *and* 1913 *Inspection.*

	1912	1913
Number of properties inspected	1,758	5,042
Number of trees inspected (an estimate)	150,000	
" " " " (actual count)		166,000
Number of properties infested (including dead scale	793	123
Number of trees of 1910 planting destroyed	7	0
Number of trees of 1911 planting destroyed	339	6
Number of trees of 1912 planting destroyed	377	45
Number of trees of 1913 planting destroyed		6
Total number trees destroyed	723	57

By comparing these two tables it will be seen that the results of the past season are very gratifying. Scarcely any infested stock came in, though unfortunately six trees of the 1913 stock bore living scale. How these scales escaped being destroyed by fumigation is hard to say. However, with better organization and the experience of the past year no stock should be allowed to enter another year bearing scale whether dead or alive. Practically all of the stock planted this year outside of home grown stock, came in from American nurseries and was fumigated by the Dominion Authorities at their ports of entry.

In addition to the above results which are given for the sake of comparison with those of 1912, the following data compiled from our reports will undoubtedly be of interest to our fruit growers:—

Total number of properties inspected	5,042
Total acreage (approximate) in orchards	31,206
Number of fruit growers who spray at least once; (We did not request number of sprayings)	2,378
Number of fruit growers who do not spray	2,664
Percentage that spray	47.3
Acreage of orchards sprayed	23,311
Acreage of orchards **not** sprayed	7,895
Percentage of orchard area sprayed	74.7

It will be seen on consulting the above data that scarcely half of the fruit growers in the area inspected spray their orchards. How many of them spray more than **once** or spray effectively would be more difficult to determine. However, the area of orchard sprayed at least once (nearly 75 per cent) shows in general that the people who do not spray are those with small orchards. If the small fruit growers could be induced to spray, it would not be long before the insect pests of the apple would be greatly reduced. These small orchards scattered all over the fruit district serve as breeding grounds for the propagation of many insect pests that might otherwise be almost exterminated. If the larger fruit growers would unite as a body and aid in an educational campaign for more spraying and better spraying, I think the results would be very marked within a few years.

I have also compiled this data according to counties and as one hears considerable discussion regarding the percentage of orchardists who spray these results will undoubtedly arouse considerable interest.

	Hants Co.	Kings Co.	Anna- Co.	Digby Co.
No. of trees inspected......	10,704	102,195	52,117	818
No. of trees destroyed.....	15	36	5	0
No. of properties inspected.	532	2,735	1,631	144
No. of fruit growers who spray..................	117	1,729	525	7
No. of fruit growers who do not spray...........	415	1,006	1,106	137
Percentage that spray.....	21.9	63.1	32.3	4.8
Total acreage in orchard...	2,372	20,435	8,118	281
Acreage sprayed at least **once**..................	1,105	17,652¾	4,601	41¼
Acreage not sprayed at all..	1,357	2,782¼	3,517	239¾
Percentage sprayed........	43%	86.25%	56.75	14.5%

From an examination of these tables it will be readily seen that Kings County holds the record both as to number of orchardists who spray and the acreage sprayed. In Hants County less than half of the acreage is sprayed while in Digby County scarcely any spraying is done. In Annapolis slightly over half of the area is sprayed once. Further discussion of these results would seem unnecessary as the figures speak for themselves. There is need of an effective educational campaign in order that more of our fruit growers spray and spray more effectively. Spraying should be done not only when a full crop is expected but also in the lean years.

Cost of the Inspection Work.

During the past two seasons the province has been very generous in providing adequate means for the effective prosecution of this work. Every effort has been made to exterminate this pest from the fruit belt. The individual orchardist should now make an effort to take care of his own trees and when he suspects San Jose′ Scale present to immediately notify the Department of Agriculture and assistance will be given. The inspection work need not be continued on so large a scale but two or three inspectors should be able to trace up and inspect all suspected stock. Our efforts should be now employed to see that only **clean** stock is allowed to enter the province and that local nurseries are carefully inspected each year. In this way we can prevent further outbreaks and at the same time reduce the present infestation to a minimum.

	1912	1913
Total cost of inspection work..........	$3,034.77	$3,138.70

In conclusion I wish to thank all the inspectors for their earnest and painstaking work. Mr. H. G. Payne has done very effective field work and the men under him, Messrs. Kelsall, Gilliatt, S. H. Payne, Shipton, Dustan, Crooker, McMahon and Munro, have worked faithfully and earnestly, each one trying to do his best to interest the fruit growers and secure their active support.

Respectfully submitted,

ROBERT MATHESON.

PART 4—HORTICULTURAL DEPARTMENT.

To M. Cumming, B. A., B. S. A.,

Secretary for Agriculture.

Sir:—I have the honor to submit my seventh annual report as Horticulturist.

While the season of 1913 was favorable for the hardy garden vegetables it was not a good year for some of the most important horticultural crops. The warm weather of early spring was followed by heavy frosts, especially on the 15th and 16th of May and between the 9th and 13th of June. There was much cold, wet weather during the time of blossoming of orchard fruits. Frosts occurred again in August and September, materially shortening the growing season for tender crops.

Fruit trees generally were well filled with blossom buds most of which opened giving the appearance of normal bloom. But an examination of blossom buds on Gravenstein, Duchess, Astrachan, Baldwin and King apple trees on May 19th showed many blackened centres (pistils), without doubt the work of the frost. Sometimes all of the five or six blossoms of one cluster were thus destroyed. On some varieties, such as Duchess, whole blossom clusters including leaves and fruit spur were killed outright. Blossom clusters which showed the least injury from this blackening of the pistils were usually situated in the centre of the tree or on the under side of the branches. It was here that the most fruit set on apple trees that bore a short crop.

Notwithstanding the unfavorable season for apples, the crop for the province this year is estimated at over 500,000 barrels as compared with 996,000 barrels marketed from the 1912 crop. Owing to the short crop this year almost the world over, prices have been better than usual, and the total amount brought into the fruit district as a whole this season will not be much less than last year. Prices in 1912-13 for No. 1 grade of the leading varieties as reported by the United Fruit Companies of Nova Scotia were as follows:—Gravenstein $2.11, Blenheims $1.84, Ribstons $1.55, Kings $2.29, Bishop Pippin $2.54, Baldwins $1.84, Starks $2.09, Golden Russets $3.00, Spys $2.29, Wageners $1.95, Greenings $1.79, Fallawaters $1.87, Ben Davis $1.69, Nonpareil $2.24. During the present season prices for No. 1 grade were:—Gravensteins $3.36, Blenheim $2.50, King $2.84, Fallawater about $3.10, Baldwin $3.20, Nonpareil $3.75, Spy $4.00, Russet $4.50.

The Model Orchards.

The model, or demonstration orchards, have continued to grow well this year and some of them have produced a fair crop of fruit in spite of the unfavorable season. Some of the younger orchards which deserve especial mention because of their growth are those at Great Village, Loch Side, Enon, New Grafton, Kempt, Milton and Sable River. Some of the best yields of apples were obtained in the following orchards.—

Gore, Hants County, set in 1903, 26 barrels,

New Germany, set in 1902, 26 barrels,

Deerfield, Yarmouth County, set in 1902, 35 barrels,

Lochaber, Antigonish County, set in 1904, 30 1-2 barrels,

West Bay, C. B., set in 1902, 40 barrels.

One Dudley tree, 7 years out, in the orchard at Lochaber bore four bushels. These orchards are each about two acres in extent, except the one at West Bay, which is one acre. No new demonstration orchards were set in 1913. There are now 35 in the province.

The Aphis.

The aphis has been very abundant in many places throughout the province this year. This insect, in seasons favorable for its growth, is very difficult to control. In the first place each individual is very small, and to be killed, must be hit by the spray mixture applied for this purpose. In the second place if any escape being hit by the spray it is only a short time before just as many more insects will be back on the plant again, because they multiply so rapidly. Four insecticides including soap solutions, kerosene emulsion and Black Leaf 40 were tried in the college orchard this season. Of these the Black Leaf 40 gave the best results.

Blossom Dates.

The table on page 54. shows the dates for full bloom of a number of varieties of the apple in different parts of the province.

It will be observed that there is often a difference of ten days between the blossoming of the earliest and latest varieties in any given locality and also that for the same variety there may be a difference of two weeks between the earliest and latest localities in the province.

These dates are of interest (1) because they determine the time for two important sprays, the one just before the opening of the blossoms and the one just after the petals fall, (2) because they show that different varieties, such as the Gravenstein and Northern Spy, should be sprayed at different times, and (3) because they show that portions of the province like Cape Breton and the east have a shorter growing season by two weeks than the earlier parts of the province. Varieties, such as Spy and Baldwin, which barely come to maturity in the fruit district would therefore not be suitable for planting where the season is so much shorter.

Dates for Full Bloom of Apples.

	Ontario	Stark	Hurlbnt	Astrachan	Golden Russet	Wealthy	Ribston	Wagener	McIntosh Red	Ben Davis	Dudley (North Star)	Yellow Transparent	Duchess	Northern Spy	Gravenstein
Wolfville	J 7	J 5	....	....	J 4	....	J 4	J 6	....	J 8	....	M31	....	....	M28
Falkland Ridge	J 5	J 7	....	....	....	J 5	J 5	J 7	....	....	....	....	....	J 10	....
New Germany	J 3	....	J 3	....	....	....	....	J 1	....	J 6	....	....	....	....	J 3
New Grafton	J 4	J 6	....	....	J 5	J 2	J 6	J 4	J 8	....	....	J 1	....	....	....
Bridgewater	....	J 6	....	M26	....	....	....	....	....	J 6	....	J 1	....	J 8	M25
Milton	....	....	....	....	J 1	....	....	J 1	....	....	....	M26	....	....	M24
Welshtown	....	....	....	....	....	....	....	....	J 1	....	....	J 1	....	....	M29
Deerfield	J 4	....	....	M28	....	J 4	J 2	....	....	....	....	....	....	....	M31
Bear River	....	J 2	....	M25	....	....	J 3	....	....	....	....	....	M26	....	M28
Cook's Brook	J 13	....	....	....	....	J 9	....	J 12	....	....	J 9	J 12	....	....	....
Avondale	....	....	J 9	....	J 8	....	....	....	....	J 10	....	J 6	J 4	J 12	....
Lochaber	J 12	J 12	J 11	J 7	J 8	J 9	J 12	J 7	J 10	J 14	J 7	J 9	J 7	J 16	....
Aspen	....	....	J 13	....	J 13	J 10	....	....	....	J 15	J 6	J 4	J 6	J 10	....
Whycocomagh	....	....	....	....	....	....	....	....	....	....	....	J 11	J 15	J 6	....
West Bay	....	....	J 13	J 10	....	J 15	....	J 14	J 16	J 18	....	....	....	....	....
Blackstone	....	J 20	J 18	....	J 27	J 18	....	....	J 27	....	....	J 15	J 15	....	....
Glendale	J 19	J 17	....	J 12	....	J 15	J 16	J 16	....	....	....	J 23	....	....	....

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New Horticultural Building at the Agricultural College, Truro, N. S.

Part of the nursery of evergreen and deciduous trees and shrubs at Plumdale, Farm.

The Horticultural Building.

The new horticultural building to which reference was made in last year's report has since been completed and has been in use for class room purposes for the Rural Science class in horticulture and the regular and short course classes of the Agricultural College. This building with its equipment of greenhouses and storage and forcing cellars has added greatly to the efficiency of the horticultural teaching.

A New Greenhouse.

A new greenhouse 50 feet long by 23 feet wide, partly for entomology and partly for horticulture is being erected about one hundred feet south east of the present greenhouses. This house, constructed by the Lord and Burnham Company, New York, is divided by a partition into two compartments, one for use as an insectary, the other for flowers and vegetables.

The greenhouse is constructed as follows:

One-half inch flat iron side posts of guaranteed wrought iron are placed on 8′-4″ centers and securely set in concrete piers. These posts are connected with the one-half inch flat steel rafters at the eaves, which meet at the ridge.

The side and end walls are constructed of concrete, and are 4″ thick. These are merely curtain or panel walls, and are built between the rafter foot pieces and supported at their ends on the concrete piers. The walls are capped with 4″ cast iron sills.

Patented, galvanized, angle iron, ice clearing eaves plates with sash bar clasps attached, are secured to the rafters at the eaves. Angle iron purlins are placed on each side of the roof between the rafters and properly spaced to support the cypress sash bars. The purlins are secured to the rafter by wrought iron fittings, and the sash bars which set into the sash bar clasps on the eaves plate are secured to the purlins by means of screws.

The glass, which is 16″ by 24″ in size, is bedded in putty on the sash bars.

Each compartment is provided with four lines of ventilating sash and four lines of shafting, together with the proper ventilating machinery to operate the sash. There are two runs of sash at the ridge, and one on each side.

The heating coils, which are constructed of 2″ guaranteed wrought iron pipe, are placed under the benches and properly distributed to heat the compartments evenly to a temperature of 55 to 60 degrees when the outside temperature is at 10 degrees below zero. The coils are provided with patented automatic air headers, which are placed at the high ends, and which relieve the coils automatically of accumulated air.

The house is benched with iron frame plant beds with cypress sides and porous tile bottoms, and the house is in every way an up-to-date structure and one designed to require the minimum amount of maintenance.

Land Purchased for Horticulture.

In the spring of 1913 a piece of land, known as Plumdale Farm, consisting of thirty acres and situated three quarters of a mile east of the College was bought for the purposes of horticulture. Some such enlargement has been greatly needed for a number of years on account of the crowded condition of the land around the College, and the difficulty of getting sufficient space for horticulture there or elsewhere. This farm has a house which is used as a residence for one of the men employed in the horticultural work, and a barn in which are kept some of the live stock belonging to the farm department of the Agricultural College. It is the plan to use the new farm for the more extensive operations in horticulture, growing as large a variety of fruits, flowers and vegetables on the ground near the College as possible but on a smaller scale than at Plumdale. About three quarters of an acre of the land recently bought has been planted with nursery stock, including orchard fruits, strawberries and ornamental shrubs and trees. Another piece of the same size yielded a crop of strawberries this season and will be cropped again with strawberries in 1914. One-half an acre was planted to strawberries in August using potted plants for most of the stock. Four and one-half acres were devoted to mixed vegetable crops last season. Three acres were sown to green feed as a preparatory crop for vegetables next year. Two acres of swamp land have been underdrained. The remainder of the farm consists of pasture and bush land.

The Vegetable Garden.

With the exception of corn, squash and pumpkins the vegetables did very well this year. The season was somewhat more favorable than that of 1912 on account of having more fine weather. The frosts between the 9th and 13th of June gave cucumbers, squash and some of the tomatoes a severe setback. Again on the 5th, 6th and 7th of September there were frosts that injured all the tender vegetables. Except for this there would have been large yields of ripe tomatoes, corn and squash, since the weather during the succeeding month was fine and warm.

Preparation of the Ground.

In the fall of 1912 barnyard manure was applied at the rate of about 25 tons to the acre. The ground was then plowed up roughly and left for the winter. Early in the spring it was harrowed with the spring tooth until it was well loosened up and the surface reduced to a fine condition. It was allowed to stand for a few days to let heat and air enter and to dry out somewhat. It was then plowed shallow and afterwards harrowed several times with the spring tooth and spike tooth until it was in a fine state of tilth.

Fertilizers and Manures.

Complete fertilizers were used along with barnyard manure for most of the vegetable crops. They were applied to the ground and harrowed in before sowing, with the exception of the tomato crop to which the fertilizer was applied in the hills about ten days after planting out. Complete fertilizer was also used without manure, being applied to land which had a clover sod turned under in the spring.

The following are some of the crops on which both manure and fertilizers were used:—

The cabbage, cauliflower, celery and Brussels sprouts received an application of fertilizer at the rate of 1500 pounds per acre, containing 4 per cent nitrogen, 10 per cent phosphoric acid and 8 per cent potash. This fertilizer was prepared by mixing 380 pounds of nitrate of soda, 850 pounds of basic slag and 270 pounds of muriate of potash.

The leeks and onions were given an application of fertilizer containing 3 per cent nitrogen, 6.6 per cent phosphoric acid and 9.4 per cent potash, supplied by a mixture of 340 pounds of nitrate of lime, 544 pounds of acid phosphate and 272 pounds of muriate of potash.

Forcing Crops.

The season for some garden vegetables could be greatly lengthened by starting them early under glass in hotbeds, cold frames or forcing hills. Sometimes crops such as cabbage, cauliflower and tomatoes would be transplanted, others like radish, lettuce and beets could be grown to maturity where the seed is sown. Tests were made here this year with beets, cucumbers and melons to see how much earlier the crop could be obtained by this method.

Beets were sown early in well prepared soil in cold frames and were ready for use when the first thinnings were being made of those sown outside. Cucumbers were started in strawberry boxes under glass May 5th and were hardened off in cold frames beginning the 27th of May and were planted out in prepared ground on June 5th. Twelve hills were covered each with a small frame and sash, making a forcing hill. The remainder were left uncovered. On the 11th of July the covering was removed. The difference in yields was at the rate of 35,000 pounds per acre in favor of the covered plants. A similar trial was made with muskmelons, good specimens of which were brought to maturity which could not otherwise have been done in this season and climate.

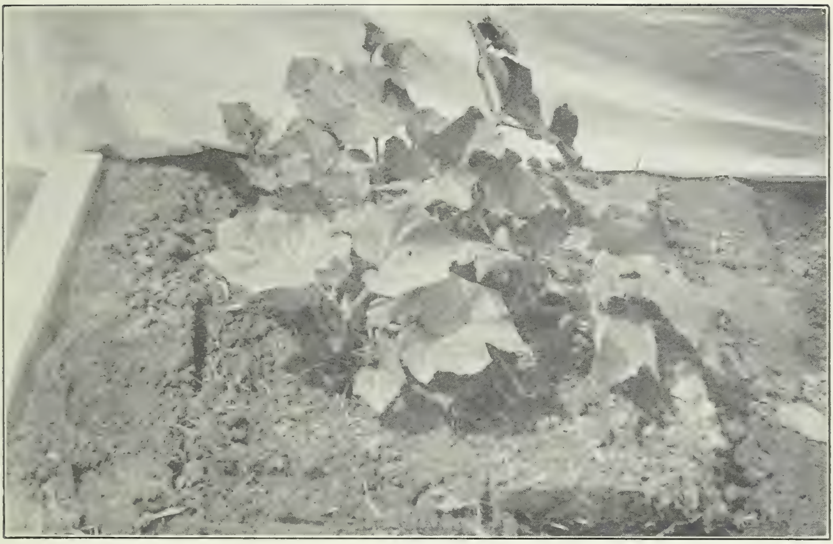
A bench of tomatoes of the varieties Stirling Castle and Rockford was grown in the green house during the summer and fall. A crop of even sized, smooth tomatoes was harvested, the yield being 7 1-2 pounds to a plant. A crop is now under way to ripen early in the spring, the variety being Toogood's Best of All.

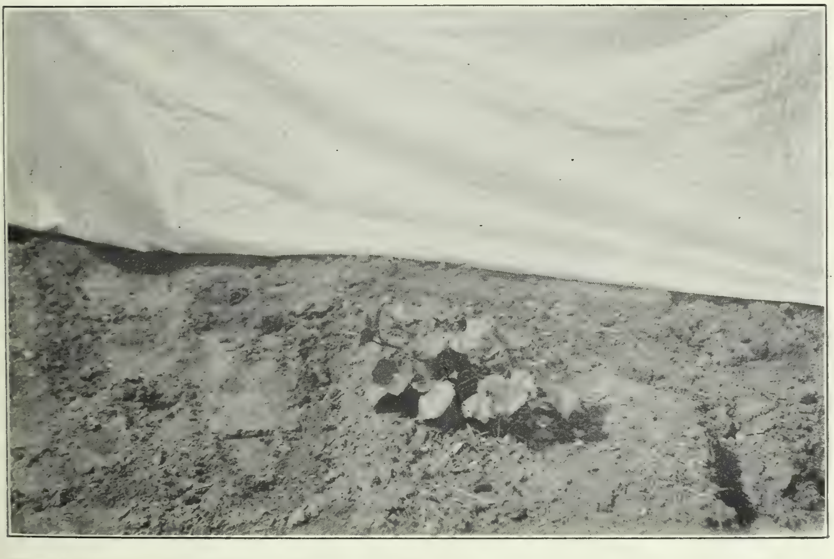
Two crops of mushrooms have been successfully grown in the horticultural cellars this fall and a third one is now under way. A crop of rhubarb and asparagus has also been made ready to be grown in the cellar in the winter.

The Nursery.

The nursery has been extended this season by the planting of 3,000 seedling apples, 1,000 Myrobolan plum stock, 250 Mazzard Cherry stock and 100 Manetti roses. Part of these have been planted at Plumdale Farm where the extensions to the nursery in the future are to be made.

A number of the apple seedlings were root grafted by the students in February and were planted in the nursery in spring. Most of this grafting was successful





Two hills of cucumbers treated exactly the same, except that the upper hill was protected until July 11th with frame and sash.

and the trees grew well through the summer. The remainder of the seedling stock, including apple, plum, cherry and rose was budded in the nursery in August.

A propagating bed for strawberries was planted in the nursery in the spring. Besides the varieties which were under cultivation at the College there were added the following:—

Nick Ohmer (Perf.). Bubach (Imper.), Commonwealth (Perf.), Superb (Everbearing) and Model (Everbearing).

In July about 1200 strawberry plants were layered into 2 1-2 and 3 inch pots and used in August for planting a piece of ground where carrots had failed.

Thirty-seven different species of hardy perennials have been added to the nursery by importation of the plants from France and nineteen different kinds started from seed in cold frames in July to be ready for planting out in the spring.

A number of ornamental trees and shrubs both deciduous and evergreen have been imported and planted in the nursery, the object being to make this part of the horticultural work as complete as possible.

Orchard Demonstration Work.

During the past season some orchard demonstration work was begun by this department in several places in the province with the aid of funds set aside from the Dominion grant for this purpose. Three orchards have been selected in Eastern Nova Scotia for this work, one owned by Mr. D. M. Brown, Pugwash, the second owned by J. McFarlane, Orangedale and the third by J. McLeod, Stirling, C. B. Mr. P. L. Morse, a former student of this College, and of the Ontario Agricultural College, Guelph, was appointed to visit these orchards in the fall to take note of their requirements and to begin the work of renovation which is to be carried on next year. The necessary pruning in each case was done, where possible the ground was plowed and the owners advised as to the best steps to take next. In the spring the orchards will be sprayed with mixtures of both dormant and summer strength. They will be tilled and fertilized according to the approved methods of orchard management and careful note taken of the results. Another orchard which was selected for demonstration purposes, visited by Mr. Morse, and given the same treatment is that of Rev. P. Bracq, Hectanooga, Digby County. The object is to make these orchards object lessons for the communities in which they are located, and a portion of the expense of renovation is to be borne by the Department of Agriculture with that understanding.

In Lunenburg County where orchard demonstration work is also being undertaken, two orchards have been selected for treatment similar to those mentioned above and a somewhat different line of work is being carried out. Here the horticultural representative undertook to visit as many apple orchards in the apple sections of the county as possible, to take note of their condition and requirements, to meet the owners of these orchards individually and to discuss with them problems of orchard management, advising them of improved methods and showing them by actual demonstration, where necessary, how some of the orchard operations, such as pruning, are best performed. We were fortunate in obtaining the services of Mr. L. D. Robinson of Berwick for this work. Mr. Robinson spent four weeks in Lunenburg County at the work and has made the following report:—

"My general instructions were to meet the growers of apples in their orchards, and discuss orchard problems with them; to point out mistakes in their methods and suggest proper treatment; to point out diseases and provide a remedy; and to gather statistics as to the site, age, varieties, cultural methods, fertilization, acreage and yield of the various orchards visited.

"So far as Nova Scotia is concerned, this has been pioneer work. A somewhat similar work carried out in New York some fifty ago years, resulted in that State becoming the greatest apple producing state in the Union. Let us hope that similar results may be worked out in Lunenburg County, and that its possiblities as an apple producing centre may be speedily realized.

"This work was carried out in the vicinity of Bridgewater and New Germany. Orchards were visited in Bridgewater, Hebbville, Hebb's Cross, Conquerall Mills, Waterloo, Newcomb, New Germany, Riversdale, Parkdale, Scarsdale, Farmington, Barss' Corner, Watford, Northfield, Upper Northfield and Wentzel's Lake.

"The numerous detached hills of this region, each resting upon a substratum of heavy clay, the numerous and low lying lands with their scanty depth of poor soil, the unmistakable markings on the polished surface of the exposed bed rock, all point to glacial activities in the remote ages.

"On account of a clay subsoil, these hills are usually somewhat wet—not too wet for the production of heavy crops of grain, but slightly too wet for apple trees. There are, however, ideal spots to be found on the sheltered sides of these hills, where wild apple trees grow in profusion and the cultivated varieties find a congenial soil.

"These hills with their sloping sides offer excellent opportunities for under draining. Some enterprising farmers have already done valuable work in this direction by improvising stone drains. There is no doubt that an up to date ditching machine would be of great assistance to the farmers of Lunenburg County, especially to those engaged in apple growing.

"While the broken character of the land might seem to Annapolis Valley growers, with their broad acres of orchard, as a handicap, yet it also possesses its advantages. When orchards are isolated as in Lunenburg County, the control of orchard pests is greatly simplified. It is a notable fact that growers in Lunenburg County can obtain far better results from two applications of spray than the Annapolis Valley growers can with four.

"Apple tree canker is the greatest menace to orchard extension in Lunenburg County. The Ontario Baldwin, Nonpariel, and Ribston are very susceptible to this disease. It has not yet obtained the foothold that it has in the western parts of Annapolis County, but it is found in most every orchard where varieties such as those named above are grown. It is very noticeable that canker is much more prevalent in orchards where spraying, cultivation and fertilization hve been neglected.

"Previous to this orchard visitation, the growers were in entire ignorance of the existence of this disease in their orchards, its danger to their fruit interests and the method of treating it. The work done in this connection has more than justified this survey.

"The comparative immunity from apple scab that this county enjoys has not in this case proved an unmixed blessing. It has led to neglect of spraying and the inevitable result, cankers, moss grown trees, codling moth, and bud moth.

"While there are orchards in this county that cannot be surpassed by the best in the Annapolis Valley, yet the majority are very much neglected. As yet, the owners fail to understand the effect of systematic cultivation and fertilization upon the production of fruit buds. They do not need to be told that they must feed and care for cows to get returns in milk; yet they leave their orchards continually in grass for years, mow the grass and cart it away, and then complain that the orchards in their vicinity will not bear. These growers only get a good crop when all conditions are favourable and prices low as a result of almost universal over production. These orchards should be sprayed, cultivated and fertilized, and the canker treated. Three sprayings are recommended—the first when the leaf buds are opening, the second before the blossoms open, the last when most of the blossoms have fallen.

"The orchard of Mr. DeLong at Barss' Corner which has been chosen for demonstration purposes has received no cultivation, fertilization, pruning or spraying for several years. It was in fact a veritable paradise for all kinds of orchard pests, cankers, scab, codling moth, tent caterpillars, borers and bark lice. Under my direction and assistance it has been thoroughly pruned, the cankers either cut off with the branches or diseased parts cut back to clean wood and bark, and the wounds completely covered with white lead paint. This is the place to put into practice all the principles of orcharding applicable to the locality. It is here that the great fight must be waged against orchard pests of all kinds. It is here that problems in fertilization, cultivation and spraying must be worked out.

"In conclusion, I wish to thank the orchardists of Lunenburg County for their co-operation in this work, as well as for their genuine hospitality.

Respectfully submitted,

L. D. ROBINSON."

Box Packing Schools.

With the steadily increasing area being devoted to apple culture the world over, competition in this industry is growing keener year by year. In the future the greater profits are likely to arise from the production of fruit of a better quality rather than from producing larger quantities. Many of the best kinds of apples can be put on the market to advantage, only through better methods of packing and handling than are at present being used. The best grades of Gravensteins, McIntosh Reds, and Northern Spys should never be barrelled, but should be packed in boxes to allow of their reaching the consumer in a condition corresponding with their quality as dessert fruit. The demand for box packed apples is likely to become greater as the customers become more discriminating in their tastes. There are some markets now, such as the Canadian West, in which apples cannot be sold to the best advantage unless they are packed in boxes.

In order to assist those who are anxious to learn the art of box packing, special demonstrations in this subject have been carried on at the Short Course at the Agricultural College for the past three years. In order to bring this work nearer to those living in the fruit district, arrangements are being made to conduct a short course at a central point in the Annapolis Valley during the coming winter. We have fortunately been able to obtain the services of Mr. P. J. Carey of the Dominion Department of Agriculture to assist in this work. Mr. Carey has given the box packing demonstrations at the Short Course here for the past three years and is well known in many of this province who are interested in the production and marketing of better fruit.

Conclusion.

In making the horticultural report mention should be made of Mr. James Allan, to whose efficient services as Superintendent of the horticultural work at the College much of the credit for the success of this department is due. Mr. Allan has had the charge of planting, growing and disposing of the garden produce, the construction of the drives and the development of the College grounds. He has also done useful work in the planning of new horticultural buildings and in assisting in carrying these plans through.

During the year just ended I have carried on my usual work of teaching horticulture to the regular and short course students of the Agricultural College, of teaching school gardening to the Normal College and Rural Science School students, of visiting the model, or demonstration orchards, judging at exhibitions. I have prepared Part II of the Annual Report of Agriculture on Gardening.

Respectfully submitted,

P. J. SHAW.

PART 5—REPORT OF FARM SUPERINTENDENT AND PROFESSOR OF AGRICULTURE.

Principal M. Cumming,

Secretary for Agriculture.

Sir:—I have the honor to submit herewith the Annual Report of the Nova Scotia Agricultural College Farm for 1913, Part 1 of which is written by Prof. L. Stevenson, and covers the period from Jan. 1st to July 1st. Part 2 covers the remainder of the year and is my own report.

Part 1.

As in the past years, the detailed management has been carried out by Mr. Thomas Hooper, Farm Foreman and Manager of the Horse Barn. The cattle and swine have been as usual in charge of Mr. Wm. Retson.

During the months of January, February, March and April the farm men and teams were engaged in the regular winter work of the farm, consisting of hauling coal, hay, manure, sawdust, etc., and caring for live stock. During February and March two teams were hired out to work in the lumber woods.

During the month of May, men and teams employed continuously at cultivating, seeding, and fence structure operations.

The Seeding of Oats.

All lands on which turnips, mangels and corn were grown during 1912, were plowed in October and November of same season .On these lands oats of Banner Variety were sown with a disc drill after the soil had been well cultivated with springtooth and disc harrow, no yard manure or chemical fertilizer was applied; all seed treated with Formaldeyhde solution to destroy smut germs. Rate of seeding two bushels per acre of large plump seed, home grown and free from impurities. Soil temperature at seeding date (April 26th) 52 degrees. Seed germinated and showing above ground in ten days. May 6th, soil temperature had reached 60 degrees, to fall again to 48 degrees on May 15th Oats at this time 2 inches high.

Ten acres of the Marple Farm were seeded to oats at the rate of two and one-half bushels per acre on Spring plowed land May 10th. All seed used was treated with Formaldehyde solution.

Three acres of "Clish" marsh land was plowed and seeded on May 14th and 15th, at the rate of three bushels per acre, part of which was treated and part not treated. One and one-half acres of this area was plowed with Spalding Deep Tilling machine twelve inches deep, the remainder was plowed with ordinary scotch plow eight inches deep.

Clover and Timothy Seeding on Oat Land.

All land seeded to oats was also seeded with a red clover, alsike clover and timothy mixture; five lbs. red clover, two lbs. alsike clover and six lbs. of timothy per acre on upland, and two lbs. red, three lbs. alsike and seven lbs. timothy on low lying and marsh land.

Basic Slag Applied.

On the three acres of marsh land which had not been plowed for many years (over 25), a ton of Leed's basic slag was applied.

Seeding of Soiling Crop.

An area of 1.26 acres that had produced timothy hay in 1912 was plowed on April 18th and 19th, manure from stables applied directly and worked in with disc harrow, sown on April 24th with the following seed grain mixture: vetch, one-half bushel per acre; peas, one bushel per acre; oats, one and one-half bushels per acre. This crop appeared above ground in nine days.

Fall Rye and Winter Vetch.

An area containing 1.42 acres was seeded to Fall Rye and winter vetch on September 12th, 1912 for soiling.

Land preparation. Timothy sod plowed in August and top dressed with yard manure, which was disced in. Rate of seeding, one and one-half bushels rye per acre, one-half bushel vetch per acre. Both rye and vetch suffered from winterkilling, and very little vetch survived. Growth:—Rye, 24 inches high June 7th, 1913; Vetch, 18 inches high June 7th, 1913. Rye was just beginning to head when measurements were taken.

Fall Rye.

An area or 1.9 acres of the "Mackenzie Field," that had produced a soiling crop of peas, oats and vetches in 1912, was plowed and seeded to winter rye. The stand was fairly uniform in the autumn but suffered somewhat from winterkilling. Spring growth was good in that a height of 23 inches had been reached on June 6th.

Soiling Crop and Alfalfa Seeding.

A plot 150 feet by 66 feet was seeded May 24th with oats, peas andv etch. Alfalfa seed was also applied at the rate of 20 lbs. per acre. Sixty pounds of air slacked lime was sown over the plot after seeding and harrowed in. The seeds germinated and plants were above ground June 2nd.

Corn Land Preparation.

A clover and timothy sod area, containing nine and three-quarters acres and from which the hay was removed in August, 1912, was plowed after being pastured in November. Type of furrow made, 6 inches deep, set on edge. Manure to the extent of twenty ton per acre was applied during the winter. This was spread during April and cultivated into the soil with a disc harrow in May. Replowed with gang plow and disced first week of June, rolled, harrowed and sown with Compton's Early and King Phillip corn at rate of one-half bushel per acre in drills 36 inches apart. The drill deposited, on average, twelve seeds per yard.

For report of harvest see Part 2, by Mr. Trueman.

Farm Stock.

Horses. Health of horses has been excellent, no veterinary visits and no losses.

Increase: An entire Clyde colt from imported sire and dam was purchased in January. An entire Clyde colt was born on May 8th of imported parents, his sire, the well bred horse Black Regent, his dam, Miss Time.

Sales.

The young Clydesdale stallion Royal Everard was sold to H. G. Matheson, Hunter's Mountain, Cape Breton. A grade Standard Bred mare was exchanged for a grade Standard Bred gelding. A cross bred gelding was sold in March.

Stallion patronage has been falling off owing to the great number of privately owned stallions standing in the vicinity of Truro. I would recommend that but two stallions be kept for service, viz; a Clydesdale and a Standard Bred.

The seminal fluid of all stallions has been examined by me from time to time and has been found well supplied with Spermatazoa, so any charge of "not being sure" against any of the horses is entirely unfounded and in every case where a mare has failed to conceive the fault has either been with the individual mare or with those entrusted with her care and management.

The horses standing at service for season 1913:—

Royal Baron (Imp) 4763—Clydesdale,

Achille (Imp) 30589—Standard,

Cliffe Rosdaor (Imp) 710—Hackney,

Lucifer 2—Thoroughbred.

Four promising young Clydesdale mares are coming on, one of which will be bred. Two promising young stallions are growing up and will soon be ready for a life of usefulness.

Cattle.

Since my last report all energy possible has been applied in establishing a firm foundation for a herd composed of three different breeds of cattle. Health, utility and beauty have been the three objects sought and as soon as they have been attained experimental feeding may be carried on to advantage. No experimental feeding has been carried on during the past six months. All efforts have been expended in correcting existing undesirable conditions.

There has been no sale of cattle for breeding purposes for various reasons, having reacted to the tuberculin test or failed to come up to our high standard of milk production or had become barren or were of undesirable conformation or disposition.

The number of reacting animals in the herd at this date, June 30th, is 29. The number of non-reactors 39. The balance is now much in favor of the non-reactors and it will be seen that considerable progress has been made during the twelve months, July 1st, 1912 to June 30th, 1913, towards putting the herd on a proper basis from every point of view.

Four cows are now under Record of Performance test, two Holsteins, one Ayrshire and one Shorthorn.

Outside pasturage has been secured which is reducing the cost of maintenance during the summer months and is also an aid in isolating the reactors from the non-reactors.

Any surplus soiling crop which is not used or not required for green feed, will be ensiled and used by the cattle during the winter.

The tuberculin test is now applied to all cattle by an official of the Dominion Department of Agriculture. A number of high class young bulls that have passed the test are now ready to go out for service.

Swine.

I am pleased to report a good season for swine. The young pigs were born strong, grew well and sold readily. I would advise the increase of the swine herd and have, in consequence of the big demand for young breeding stock kept two choice young sows of our own breeding and also have purchased two young sows from Nappan. This will bring our breeding herd up to nine Yorkshire and five Berkshire sows.

Our six Yorkshire brood sows produced and reared 50 strong pigs, all but two of which were sold and distributed throughout the province.

Our four Berkshire sows produced and reared 21 young, all big and strong. They were sold mostly in the eastern section of the Province.

The ten sows above mentioned have all been bred again to farrow during August and September. The disposition of their prospective progeny is reported in Part 2 of this report.

During the month of June the cattle barns and piggery were sprayed with lime whitewash prepared in proportion to following formulae:—Lime, 1 bushel; salt, 1 peck; formaldehyde, 1-2 gallon; linseed oil, 1 gallon.

The wash worked well in application, is of good color and sticks well to surfaces on which it was applied.

Part 2.

In taking charge of the farm in July I found that the former Manager, Professor Stevenson, had left everything in good running order and had prepared for my use accurate and complete notes on all farm work and on the number and disposition of all classes of live stock then on the farm. Professor Stevenson's thoroughness in this matter has been of great assistance to me in my effort to become familiar with conditions on the farm.

Hay.

Haying began July 18th. The new seeding with timothy and clover gave an especially heavy yield. One field of ten acres giving three tons to the acre. On the marsh the new seeding was an extra good crop; one piece of seven and one half cares cutting fully twenty-five tons. Half this land had been treated with basic slag and half with bone meal when seeded four years ago, this was plowed again last year and the fertilizing reversed, bone put where the slag was before. The result as seen in the heavy crop of hay was extremely satisfactory. Experienced farmers estimated the yield before it was cut at fully four tons to the acre.

Oats.

The oats on both upland and marsh were a good crop, and were harvested in good condition. Early seeding (practically all before May 1st) made possible a fairly early harvest, and we were fortunate enough to get the whole crop in the barn before the wet weather began early in October. These oats are turning out well when threshed and we will have in the neighbourhood of 500 bushels to sell for seed.

Corn.

A heavy frost on the night of August 27th gave the corn a severe set back, and cool nights in September caused the growth to be very slow. When the corn was put into the silo the last of September it was only in blossom, and practically no ears had formed. This kind of corn makes a poor quality of silage as it generally contains over 90 per cent of water. I have been informed that this was the poorest corn year known in the Province for some time and that in previous years the silage has been of good quality. All this corn was Compton's Early and it does not mature as early as Canadian Yellow that has been grown here in other years.

Roots.

The cut worm practically destroyed the mangel crop in June. The land that had been devoted to mangels was re-seeded to turnips the first of July and gave a good crop, although the turnips did not attain their full size.

The general turnip crop was above the average. The cutworm damaged a portion of the field but did not do as much harm as in the mangels. In spite of this difficulty, the field averaged about 800 bushels per acre, and where no damage from cut worm occurred the yield was over 1000 bushels.

During the month of October the weather was particularly wet and dull and it was not possible to get the turnips in until the middle of November.

All land to be used for oats and roots next spring was plowed during October and November. In December ten acres of marsh was plowed and drained.

Live Stock.

The live stock on the Farm consists of 26 horses of various ages, 86 cattle and 16 swine. The stock in general has done well during the past year. The increase in the breeding stock has been normal in numbers and with few exceptions of good quality.

Horses.

The three stallions "Royal Baron," (Clydesdale), "Achille," (Standard bred), and "Cliffe Rosador," (Hackney), have had a good season. Eighty-seven mares were bred to Royal Baron, forty-eight to Achille, and thirty-four to Cliffe Rosador.

The Thoroughbred, "Lucifer" 2nd had ten mares.

Young Stallions.

Beside the four breeding stallions, we have two young Clydesdales that are showing excellent quality; "Flash Royal" 12790, by Flash Favorite (Imp) (4583), out of Baron's Lily (Imp) (17431), is a two year old bay of fine conformation. He will probably be kept on the farm and a limited number of mares will be bred to him next season. "Royal Thomas," 14545, by Royal Baron (Imp) (4722), out of Dolly (Imp) (27541), is a black yearling of good conformation and promises to be a valuable horse.

Beside these we have one entire Clyde colt by Black Regent (Imp) (14547), out of Miss Time (18828).

The remaining horses on the farm are as follows:—four imported Clydesdale mares and two home bred; one two year old Clyde filly, home bred; one Hackney mare, Queen Louise, one entire Hackney colt and one Hackney gelding four years old; seven grade work horses and one three year old cross bred filly by Lucifer out of a Clyde mare.

I am obliged to report the death of one yearling filly during the summer from indigestion.

Cattle.

As reported by Professor Stevenson last year the Bang system of handling cattle has been adopted on the farm. The reacting cattle have been rmoved to two barns at some distance from the main college barn. The milking cows are at what is known as the "McKenzie" barn about one mile from the college, and a few head of young stock are at the College Horticultural Farm, also about a mile from the main barn. The McKenzie barn was remodelled during the past summer and put into good condition for housing milking cows. The floors are entirely of cement and the King system of ventilation has been installed. Here the reacting cows are kept in a comfortable sanitary condition and a visit to the barn would cause anyone to wonder how such thrifty looking animals could be diseased.

In connection with these reacting cattle, I may be permitted to make a few statements concerning the Bang system. In my work in the United States during the last twenty years, I have frequently come in contact with numbers of cattle that would react to the "tuberculin test." In handling such cattle I have found that calves removed at birth from all contact with reacting cattle and housed in clean stables, invariably remained healthy throughout life.

In 1907 I took charge of the dairy herd at the Connecticut Agricultural College. On my arrival at the College I found that a number of cows and bulls had been condemned by the tuberculin test the year before and that three of the cows were then in quarantine. A number of calves had been dropped by reacting cows and placed in the main herd previous to this time and one was dropped during that summer. These calves were all tested later and not one was found to react. The cows in quarantine were subsequently killed and found to be badly diseased. From personal experience, therefore, as well as from observation, I feel sure that we can in a few years build up a healthy herd from the offspring of the present "reactors."

Going back to the discussion of conditions on the farm, the only point at which we are liable to get infection is in feeding the skimmed milk to the young calves. In order to avoid any trouble from this source, all the milk from both barns is taken directly to the creamery where it is heated to 180 degrees F. before it is separated. By this method both the cream and skimmed milk are thoroughly pastuerized and everything that goes to the barn for feed, even the buttermilk for the pigs is free from all disease germs. The cream that has been pasteurized is ripened by the use of a "starter" and the butter obtained is of excellent quality.

The following is a brief description of the cattle in the College herd at the present date, December 31st, 1913.

Holsteins.

The Holstein herd consists of one yearling bull, three bulls just under one year, seventeen mature cows, and twelve head of young stock. thirty-three in all. In September seven cows were added to the herd by purchase, among these, four are worthy of particular notice. "Jemima Wayne Sarcastic" No. 7208 is a very large, strong cow, of fine quality. She has a seven days' record of 26 lbs. of butter. "Emma of Evergreen 2nd" No. 10645 is also a large cow and of even finer quality than Jemima. She has a record of 20 lbs. of butter in seven days made under much less favorable conditions than the 26 lb. record of Jemima.

"Spinks Butter Girl" No. 8635 is a good cow with an excellent udder. She is large and strong and we expect her to give a large amount of milk during the coming year. She has a seven days' record of 18 lbs. as a three year old.

"Victory Calamity Clay" No. 6175, is a large cow of extreme dairy type. She carries less flesh than the others and consequently appears rougher but she has a large capacious udder and when given a fair chance will undoubtedly give a heavy yield.

A bull six months old was imported from Connecticut in November. He is sired by the famous $10,000.00 bull Aagie Cornucopia Sir Colantha, whose dam and sire's dam average 34.72 lbs. of butter in seven days. He is a double grandson of the famous bull Colantha Johanna Lad and his dam was the great world's record cow Colantha 4th's Johanna. We expect his get to be a great help to us in building up a strong milking herd of Holsteins.

One of the Holstein heifers raised on the farm deserves special mention. Her name is Flora Rooker Posch No. 16960, and she is a daughter of the famous old cow Flora Wayne of Riverside, No. 2414, that gave 97 lbs. of milk in one day from three teats and over 18,000 lbs. of milk in one year on the college farm. The young cow will not be three years old until Jan. 30th, 1914. She calved Sept. 21st and in seven days gave 18.128 lbs. of butter. At the present time, after three months milking, she is giving over 50 lbs. of milk a day.

Ayrshires.

The Ayshire herd consists of one aged bull, one yearling bull, thriteen cows and eighteen head of young stock.

Three cows were purchased during the year. They were White Bessie, No. 30885; Scottie's White Floss, No. 25691, and Jessie 2nd, No. 37503.

Shorthorns.

The Shorthorn herd consists of one aged bull, one two-year old bull, six cows and ten head of young stock. One Shorthorn cow with calf at foot was bought last fall. This cow, Boyne Lady 3rd, No. 83648, is from a very fine milking strain of Shorthorns and is herself an excellent milker. She is a thick and beefy in type and is of special value because she adds to these essential qualities of a Shorthorn, the ability to give a fair amount of milk. A three-year old bull, Brilliant Morning, No. 83759, was also purchased last fall. He comes from a good milking dam and is a splendid individual.

The following table shows the milk yield of each cow during the year:—

NAME OF COW	Breed	Date of Freshing	No. of days in milk	Yied	Average yield per day	Present daily yiely Dec. 31 '13
Abby DeKol	Holstein	Apr. 20, '13	253	9644.2 lbs.	38.1 lbs.	33.5 lbs.
Buffalo Girls Posch	"	Mar. 18, '13	286	10297.9 "	36.0 "	25.0 "
College Flora	"	Dec. 5, '12	358	10587.5 "	29.5 "	....
Maple Grove Louise DeKol	"	Mar. 29, '13	275	10277.2 "	37.3 "	23.0 "
Aaggie Eleanor	"	Mar. 17, '13	290	8949.3 "	30.8 "	16.5 "
Jean Aaggie DeKol	"	Oct. 12, '12	438	10405.1 "	23.8 "	14.5 "
Artis Rosie	"	Nov. '12	353	10588.5 "	29.9 "	
Cobequid Rooker La Honda	"	Nov. '12	396	10997.3 "	27.7 "	13.0 "
Mechthilde DePride	"	Oct. 20, '13	70	2686.3 "	38.3 "	39.4 "
Victoria Calamity Clay	"	Aug. 1, '13	152	4167.5 "	27.4 "	45.8 "
Tidy Posch DeKol	"	Oct. 1, '13	91	2853.1 "	31.3 "	30.3 "
Victoria Pauline Clay	"	Oct. 12, '13	81	3775.9 "	41.5 "	32.6 "
Jemima Wayne Sarcastic	"	Nov. 30, '13	29	2157.3 "	74.4 "	77.3 "
Spinks Butter Girl	"	Dec. 17, '13	9	327.6 "	36.4 "	43.7 "
Emma of Evergreen 2nd	"	Nov. 26, '13	31	2113.3 "	68 1 "	72.9 "
Flora Rooker Posch	"	Sept. 20, '13	100	5304.9 "	53.0 "	52.8 "
Gardrum Brandy 2nd	Ayrshire	Nov. 16, '13	44	2003.0 "	45.5 "	45.5 "
Annie Laurie of Norwich	"	Oct. 25, '13	67	1858.0 "	27.7 "	27.4 "
College Merrymaid	"	Apr. '13	245	5983.2 "	24.4 "	16.0 "
Lady Mac	"	Mar. 1, '13	306	10902 9 "	35.6 "	29.5 "
Harelaw Cherry	"	Feb. 11, '13	260	5733.5 "	22.0 "	
Miss Doris	"	Mar. 12, '13	231	3356.0 "	14.5 "	
Eastcourt Creampot	"	Dec. '12	365	6500.8 "	17.8 "	
Eastcourt Miss Buttons	"	Aug. 22, '13	139	4331.8 "	31.2 "	29.5 "

Craig 2nd of St. Annes.	"	Jan. 17, '13	346	7473.7 "	21.6 "	
Scotties White Floss.	"	Oct. 1, '13	91	2684.2 "	29.5 "	25.0 "
White Bessie.	"	Nov. 29, '13	31	1397.9 "	45.1 "	48.1 "
Jessie 2nd.	"	Dec. 18, '13	6	136.1 "	22.6 "	22.8 "
Princess May.	"	Nov. 26, '13	31	824.9 "	26.6 "	29.9 "
Princess Beatrice.	"	Dec. 24, '13	6	130.1 "	21.7 "	25.5 "
Roan Fanny.	Shorth'n	June 5, '13	207	5973.8 "	28.8 "	19.5 "

Swine.

Two breeds of swine were kept during the year, namely Yorkshires and Berkshires. All stock is kept for breeding purposes. The year has been a very successful one as far as the pigs were concerned. Ninety-three young Yorkshires and thirty-two young Berkshires were sold at from four to ten weeks of age. The majority of these were sold for breeding purposes.

Two excellent young boars were bought in the summer; one a Yorkshire and the other a Berkshire. These two will be kept as stock boars.

Financial Condition of Farm.

Before closing this report, Mr. Secretary, I wish to present to you some of the reasons that make it almost impossible to pay expenses from Farm Receipts on a College Farm. In your discussion of this subject with me when I was considering the advisability of accepting a position at this institution, you mentioned that it would be greatly to the advantage of agriculture in Nova Scotia if I could demonstrate that the College Farm could be made a paying proposition. After spending six months in the position of Farm Manager I find conditions here very similar to those existing in practically all other Agricultural Colleges. Briefly they are as follows:—In the first place a large amount of extra labor must be performed every month in the year in order to keep the farm buildings and stock in satisfactory condition for receiving visitors. The visiting public expect to find everything about a College Farm in good order at all times. You may say that all farms should be kept in good order. That is true but the extra labor required to do such work adds to the expense and on the College Farm is represented by the work and wages of several men.

In the second place, the keeping of a number of different breeds of live stock of any one class is always more expensive than keeping only one breed. In an educational institution it is thought best to keep several breeds of cattle. This is more expensive than keeping only one breed. It necessitates the keeping of several more bulls, with all the expenses of selection, feeding and care greatly increased. The same is true of horses and swine.

In the third place, much work must be done which can hardly be charged to instruction of students and yet would not be necessary if this was not an educational institution but was managed strictly for financial gain.

For these reasons it is apparent that it is a difficult matter to put such a farm on a paying basis. Nevertheless, certain departments of the Farm may be managed at a profit if the accounts of such departments are kept separate from all others, and I would suggest that the accounts of these departments that are now kept separate be so published.

Respectfully submitted,

J. M. TRUEMAN.

PART 6—REPORT OF THE EXPERIMENTALIST and DRAINAGE SUPERINTENDENT.

M. Cumming,
Secretary for Agriculture.

Sir:—I submit herewith the following report of work done in the Experimental and Drainage department during the season of 1913.

The season was an average one for this Farm but the weather, during the time of harvesting the grains, was particularly unfavorable making it impossible to secure uniform conditions for both early and late grains. It actually occurred that a number of plots of grain, after being almost ready to house, became wet again and remained in shock in the field for nearly three weeks longer, exposed to weathering. It may easily be seen that plots cut under such differing weather conditions could not be fairly compared.

This does not apply in the same degree to the grasses of which we had a number of plots. The weather was all that could be desired but we were unable at that season to overtake the work in hand and get each one cut at just the same stage of maturity which is essential if comparisons are to be made.

Our root crops suffered somewhat seriously from the ravages of the cutworm making the stand of crop somewhat uneven. I found it impossible, under the conditions, to retain or replace enough plants to give a perfect stand. The method of figuring results which was followed on harvesting, viz., that of counting the number of roots in each plot and using this as a fraction of the number required for a perfect stand, is only fairly satisfactory since the plants surrounding the empty spaces are given more light and room to spread and so develop somewhat better than if the stand were perfect. This results in an error which it is not possible to estimate even approximately. It is, however, probably as nearly accurate as possible and was the method followed with roots and potatoes. In the case of mangels, the results procured in this way were so inconsistent that nothing of value could be deduced from them.

We have still another source of error to overcome. The land, on which our experimental work is done, has been cultivated with a view to uniformity for only one year previous to the season in question. Preceding that, parts of the field had been used for one purpose, parts for another. Different methods of handling and fertilizing had been followed and different crops had been grown on the various parts of the field. It can scarcely be expected that a uniform condition of soil could be reached in such a short time. This error was eliminated as far as possible by comparing results only within small areas and where the previous crops were the same. Even this has its drawbacks for it has been the practice to draw the barnyard manure out and pile it in heaps in the field during winter and early spring. No experimental results will be possible where these heaps have been for at least some years.

It is thus impossible to give very definite results from our work in 1913. Moreover the results of one year's work are not sufficient from which to draw permanent conclusions. What I have to report is the general conclusion drawn from the past year's work but must not be taken as a recommendation for the farmer until more work has been done.

Cereal Grains.

As mentioned before, cereal grains were injured during harvest; so the quality is not up to the mark in some cases.

Oats. Three varieties of oats were grown in tenth acre plots. The objects in using plots of this size was to eliminate the error which always goes with the use of a small grain plot unless handled with extreme care and under the best of conditions. The following results were obtained:—

VARIETY	Days to mature	Height of crop	Yield of grain bus. per acre	Yield of straw tons per acre	Weight per bushel	% Hull
Banner	114	3′ 9″	75	1.9	34.5	29.5
Ligowo	112	3′ 3″	67	1.6	37.0	28.85
Gold Rain	106	3′10″	86	2	38.7	25.3

The Gold Rain may prove of considerable value on our lighter soils especially for mixtures where its earliness makes it desirable for growing with our highest producing barleys. Our Experimental Union members report fair results with this variety.

Wheat. Few varieties of wheat are grown in this province to any extent and experiments were confined to the two most common, namely,—Red Fife and White Russian with Marquis as a comparison while Emmer, a class of wheat for feeding purposes was also grown. Results were as follows:—

VARIETY	Days to mature	Height of crop	Yield of grain bus. per acre	Yield of straw tons per acre	Weight per measured bus.
Red Fife	114	3′6″	33.5	1.5	59.25
White Russian	114	3′9″	34.5	1.8	58.0
Marquis	106	3′3″	27.5	1.3	58.75
Emmer	115	3′6″	1965 lbs.	1.6	No standard weight

The Emmer is one of the feeding wheats from the grain of which the chaff does not separate on thrashing. It is thus impossible to make good flour from the grain.

The Marquis wheat, now so popular in the West, has given a yield about as expected. The great advantage of this wheat to western Canada is not in its cropping powers but in its earliness and hardness.

Barley. Four varieties of barley were grown, two of the six-rowed varieties and two of the two-rowed. Results as follows:—

VARIETY	Days to mature	Height of crop	Yield of gran bus. per acre	Yield of straw tons per acre	Weight per bushel
O. A. C. No. 21........	95	3′3″	48	1.6	45.5
Mensury.............	95	3′3″	47.5	1.5	43.0
Duckbill..............	104	3′2″	52.7	1.2	48.5
Chevalier.............	105	3′4″	42	1.4	51.0

The result given by the Duckbill barley is considerably higher in proportion to that which is generally obtained.

Buckwheat. The following varieties of buckwheat were grown:—

VARIETY	Days to mature	Height of crop	Yield of grain bus. per acre	Yield of straw tons per acre
Silver Hull.....................	83	2″	18.8	.75
Japanese.....................	82	2′3″	12.5	1.3
Rye..........................	81	2′6″	31.25	1.7
Rough........................	80	2′6″	24.0	1.1

Mixed Grains: The claim has been made, and is fairly well proven, that more pounds of grain can be grown on an acre when two classes are grown mixed in the field than can be produced on the same acre from either of the classes or the two side by side each on its own part of the ground. Our chief difficulty has been to get high yielding varieties of oats, which are generally medium or late varieties, and high yielding varieties of barley, (generally the earlier varieties,) to ripen together. The following table gives results obtained:—

VARIETIES	Grain per acre lbs.	Straw per acre tons	Uniformity of maturity
Series I.			
Banner and O.A.C. No. 21	3100	2.5	poor
Ligowo and O.A.C. No. 21	2400	1.9	fair
Gold Rain and O.A.C. No. 21	2700	2	fair
Daubeney and O.A.C. No. 21	2925	1.9	good
Series II.			
Banner and O.A.C. No. 21	2850	2	poor
Ligowo and O.A.C. No. 21	2350	1.8	poor
Gold Rain and O.A.C. No. 21	2800	1.9	fair
Daubeney and O.A.C. No. 21	3100	2	good
Series III.			
Banner and White Russian	2250	1.8	good
Banner and Emmer	2725	2.5	good

Series I—Oats 1 1-2 bushels, barley 1 bushel per acre.

Series II—Oats 1 bushel, barley 1 bushel per acre.

Series III—Oats 1 bushel, wheat 1 bushel per acre.

Series I was sown with the idea that a larger amount of oats would tend to retard the maturity of the barley by growing above and shading the barley heads. A comparison of the table will show that it had a slight effect in this direction.

It will be noticed that the Daubeney oats gave the best results. This is contrary to the usual cropping of the Daubeney oat in the Maritime Provinces and can scarcely be taken as very authentic.

Soiling Crops.

Rape at the rate of 2 lbs. seed per acre was also sown in rows but failed to give a sufficient stand of crop. Crimson clover, sown in this experiment, also failed to give a result worth considering. The following soiling crop mixtures were grown.

Sown May 21st................Cut Sept. 1st

	Green weight Sep. 1st, tons	Hay condition Sept. 5th, tons
Oats 1 1-2 bush., Peas 1 1-2 bush. per acre.....	4.9	2.75
Oats 1 1-2 bush., Vetch 3-4 bush. per acre.....	6.2	3.2
Oats 1 bush, Peas 1 bush., Vetch 1-2 bush......	6.1	3.0
Oats 1 1-2 bush., Peas 2 bush. per acre.........	4.5	3.0
Oats 1 1-2 bush., Vetch 1 bush. per acre.......	6.7	3.6
Oats 1 bush., Peas 1 1-2 bush., Vetch 3-4 bush..	6.2	3.7

Grasses and Clovers.

As before stated, a number of grass plots were sown in 1912. We were unable to care for these at exactly the proper stage in 1913; so the notes on yields given below are estimated and not weighed.

SPECIES	Height	Time of blossoming	Thickness	Fineness	Estimated yield, tons per acre
Meadow Fescue...	2.0	July 20	medium	medium	2.25
Tall Fescue.......	2.75	July 17	thin	coarse	2.0
Hard Fescue......	1.75	July 17	thick	fine	2.25
Rough stalked meadow grass.......	1.5	July 10	thin	fine	1.25
Canadian blue grass	1.5	July 24	thick	fine	2.25
Kentucky Blue grass...........	2.0	July 17	thick	fine	2.5
Perennial rye grass	1.5	July 15	thick	coarse	1.75
Meadow Foxtail					
First cut........	1.5	June 13	thin	medium	1.25
Second cut......	2.0	Aug. 10	thin	medium	0.5
Orchard Grass.....	3.0	July 12	thick	medium	2.25
Western Rye......	1.5	Aug. 5	thin	coarse	1.75
Timothy..........	3.0	July 27	medium	medium	3.0
Red Top.........	2.25	Aug. 1	thick	medium	2.5
Awnless Brome....	3.5	July 24	thin	coarse	2.9
Tall Oat Grass....	4.0	July 10	medium	coarse	3.0
Kidney Vetch.....	1.25	July 24	thin	fine	1.75
Burnet...........	1.5	June 19	thick	medium	1.5

A type of Italian Rye Grass sent us from Holland, an annual in our climate, gave an encouraging return in 1912 as a supplement to the hay crop. Our 1913 results were somewhat disappointing, the grass yielding only about 1.5 tons per acre. This grass was also sent out to the members of our "Experimental Union." A summary of their reports is given on another page.

Our clover plots were so badly winter killed that no results of value could be obtained from them.

Alfalfa.

In the season of 1912, alfalfa seed was procured from various sources. This was sown both in plots, broadcast, and in rows and in all cases a good stand was secured. Alfalfa sown in 1913 failed to grow satisfactorily. This may possibly be accounted for by the fact that I found it impossible to secure seed of recognized hardy strains and was obliged to use seed of the previous year which was somewhat unsatisfactory even when new.

The following gives the strains, sources, and general results of the seed sown in 1912:—

STRAIN	SOURCE	Results, per cent Winter killed
Sand Alfalfa....	U.S. Dept. of Agriculture	In plot 96.
		In row 15.
Turkestan......	"	In plot 75.
		In row 5.
Western Grown..	"	In plot 98.
		In row 20.
Grimm.........	"	In plot 90.
		In row 20.
Common.......	"	In plot 94.
		In row 10.
Grimm.........	MacDonald College	In plot 80.
		In row 10.
Salzer's 20th Century......	"	In plot 97.
		In row 60.
N. B. Common..	C. M. MacDougall, Sussex, N. B......	In plot 80.
		In row 20.
Utah Grown....	Comm. of Conservation	In plot 99.
		In row 75.

These plots were discarded in 1913 as so few of the plants had survived. When sown in rows, the results were much better.

Mixtures for Permanent Pasture or Hay. Sown in 1912

Pasture Mixtures.

MIXTURE	Amount per acre		Green weight tons per acre	Hay condition. tons per acre	Air dry, tons per acre
No. 1					
Western Rye	9 lbs.	1st Cutting.			
Tall Fescue	3 lbs.	12 in. high;			
Can. Blue Grass	2 lbs.	thick well fil			
Timothy	3 lbs.	led with clo-			
Mam. Red Clover	2 lbs.	ver. Cut			1.4
Meadow Fescue	6 lbs.	June 13th...	6.0	1.8	
Orchard Grass	5 lbs.				
Rough Stalk Meadow	2 lbs.	2nd Cutting			
Kentucky Blue	2 lbs.	Cut August			...
Alsike Clover	1 lb.	2nd	2.85	0.8	
White Clover	2 lbs.				
(37 lbs. per acre)					
No. 2					
Orchard Grass	10 lbs.	12 in. high;			
Hard Fescue	3 lbs.	medium			
Kentucky Blue	3 lbs.	thick; clover			
Burnet	1 lb.	fairl 1st Cut			
Meadow Foxtail	6 lbs.	ting, June 13	6.5	2	1.6
Tall Fescue	5 lbs.				
Rough Stalk Meadow	2 lbs.	2nd Cutting			
Alfalfa	1 lb.	August 2nd.	1.8	.65	...
Timothy	5 lbs.				
(36 lbs. per acre)					
No. 3					
Red Clover	6 lbs.	13 in. high;			
Alsike Clover	3 lbs.	m'd'm thick,			
Orchard Grass	3 lbs.	clover fair.			
Meadow Fescue	3 lbs.	1st Cutting.	8.25	2.5	2.
Timothy	3 lbs.	June 13th...			
(18 lbs. per acre)		2nd Cutting			
		August 2nd.	3.5	.95	...

Pasture Mixtures (*Continued*)

MIXTURE	Amount per acre		Green weight tons per acre	Hay condition, tons per acre	Air dry, tons per acre
No. 4					
Alfalfa	5 lbs.	14 in. high;			
Alsike Clover	2 lbs.	m'd'm thick,			
Orchard Grass	2 lbs.	clover fair.			
White Clover	2 lbs.				
Meadow Fescue	4 lbs.	1st Cutting,			
Tall Oat Grass	3 lbs.	June 13th...	6.25	2.75	2.0
Meadow Foxtail	2 lbs.	2nd Cutting,			
Timothy	2 lbs.	Aug. 2nd...	3.8	1.1	...
(24 lbs. per acre)					
No. 5 Mixture for Hay.					
Timothy	6 lbs.	32 in. high;			
Awnless Brome	2 lbs.	thin above			
Orchard Grass	6 lbs.	with thick			
Kentucky Blue	3 lbs.	bottom.			
Burnet	1 lb.	Ready to			
Western Rye Grass	3 lbs.	cut July 22			
Meadow Foxtail	5 lbs.	22nd, cut			
Red Clover	2 lbs.	Aug. 2nd...	8.	3.95	..
(28 lbs. per acre)					

A comparison of these figures for yield with those of single grasses, will show a marked advantage in favor of sowing a mixture instead of only one species of grass and one of clover for mowings and pastures. This is the general result obtained wherever experiments of a like nature have been carried on and there appears to be no exception to the rule.

Potatoes.

Fifteen varieties of potatoes were grown in a combined variety and fertilizer test. Owing partially to reasons already mentioned and partly to the fact that the seed was obtained this year from different sources, the results given in the table below can be taken as nothing more than an indication of the cropping power of the potato. Following are the results as taken from the field:—

Variety	Bushels per acre	Size of tuber	Quality
Dreer's Standard	470	large	good.
MacIntyre	440	medium	good.
Green Mountain	430	med. to large	excellent.
Carmen No. 1	410	med. to large	excellent.
Early Ohio	415	large	good.
Vick's Extra Early	410	large	fair.
Early Rose	400	large	fair.
Beauty of Hebron	390	large	fair.
Clark's No. 1	385	medium	rather poor.
Empire State	350	medium	fair.
Early New Queen	330	medium	fair.
Gold Coin	310	medium	rather poor.
Early Vermont	285	small	fair.
Irish Cobbler	280	medium	good.
Garnet Chili	200	small	fair.

The Garnet Chili is popular in the Bermuda market. This is the only reason for growing it here as it is invariably a small cropper. The Irish Cobbler, low in yield this year, proved our leader last year from standpoint of crop. The results given above were the averages of the different rates of fertilizing and were calculated as nearly as possible under the conditions.

An experiment was also conducted with the size of cut and distance apart in the row. This was put in with rows of 31.5 inches apart and a duplicate of 26 inches or in other words, series one had five rows, series two six in the same width. The following results were obtained:—

SERIES ONE

	Marketable tubers bushels per acre	Small tubers bushels per acre	Weight of 15 largest
Green Mountain.			
1 oz. piece 1 ft. apart	448	17	11.5 lbs.
2 oz. piece 1 ft. apart	448	46	8.5 "
2 oz. piece 1 1-2 ft. apart	391	27	11.25 "
4 oz. piece 1 1-2 ft. apart	427	31	11.25 "
4 oz. piece 2 ft. apart	472	27	8.5 "
Garnet Chili.			
1 oz. piece 1 ft. apart	288	8.8	9.25 "
2 oz. piece 1 ft. apart	350	40	7.5 "
2 oz. piece 1 1-2 ft. apart	266	32	7.75 "
4 oz. piece 1 1-2 ft. apart	363	50	8.25 "
4 oz. piece 2 ft. apart	286	43	9.25 "

SERIES TWO

Green Mountain.			
1 oz. piece 1 ft. apart	307	51	8.5 lbs.
2 oz. piece 1 ft. apart	400	93	7.5 "
2 oz. piece 1 1-2 ft. apart	374	34	8.75 "
4 oz. piece 1 1-2 ft. apart	....	....	....
4 oz. piece 2 ft. apart	402	63	8. "
6 oz. piece 2 ft. apart	426	91	7.75 "
Garnet Chili.			
1 oz. piece 1 ft. apart	408	27	8.
2 oz. piece 1 ft. apart	....	....	....
2 oz. piece 1 1-2 ft. apart	304	48	9.5
4 oz. piece 1 1-2 ft. apart	380	69	8.5
4 oz. piece 2 ft. apart	316	40	8.
6 oz. piece 2 ft. apart	....	....	....

It will be noticed that the Green Mountain gave better results with larger cuts spaced farther apart than did the Garnet Chili. This line of experimenting should be given more attention.

Root Crops.

Neither mangels nor carrots gave yields consistent enough to be included in this report, owing chiefly to insect injury.

Swedes and Turnips. Fourteen varieties of swedes and turnips were tested. In some cases seed of the same variety but from several sources was used. Three seedings of swedes and two of turnips were made at different dates, the intention being to make these fourteen days apart as nearly as weather conditions would permit. A test of the early and late seedings for this crop was thus combined with the variety test. Several of the plots had to be discarded for lack of sufficient stand of crop. The results of the remainder are given below:—

VARIETY	SOURCE	Bushels per acre		
		1st seeding May 12	2nd seeding May 26th	3rd seeding June 12th
Kangaroo.................	Rennie......	770	1105	....
Kangaroo.................	Steele Briggs	895	858	790
Kangaroo.................	Simmers.....	974	926	735
Elephant.................	Steele Briggs	883	940	....
Elephant.................	Simmers.....	760	985	....
Jumbo....................	Rennie......	868	935	....
Hall's Westbury..........	Steele Briggs	1208	920	1013
Hall's Westbury..........	Rennie......	825	950	808
Hall's Westbury..........	Simmers.....	1075	1066	818
Corning's Purple Top.....	Pinckney....	991	853	755
Stine Danish Osder Sundom	Stallknecht & Meyer..	1537	1250	....
Ossa Danish Dales' Hybrid	"	1497	1070	....
Olga Danish Yellow Tankard....................	"	....	946	616
Early Sheepfold..........	Sutton......	....	1470	1340
White Globe..............	Ewing......	....	1430	1091

The seed sent from Copenhagen, Denmark by Stallknecht & Meyer did not germinate quite as well as some of our Canadian seed thus leaving the stand of crop somewhat uneven but several of the varieties gave a good account of themselves.

Cold stormy weather for some days after the first seeding accounts in large measure for the fact that many varieties seemed to give a better result with the second seeding. It is significent however, that the third seeding in nearly every case showed a decided falling off in crop.

Swedes and Turnips thinned to different distances apart in Row. An experiment in the thinning of roots to different distances apart with rows 3.3 links or 26.1 inches apart gave the following results after discarding the rows where the stand was too uneven:—

FIRST SEEDING. MAY 12th.

Hall's Westbury, Rennie.

Distance apart	Ave. weight of root	Bushels per acre
4 in.......	1.2 lbs.	1195
8 in.......	2.5 "	1287
12 in.......	3.5 "	1197
18 in.......	3.5 "	760
24 in.......	4.0 "	625

Purple Top Mammoth Sutton

Distance apart	Ave. weight of root	Bushels per acre
4 in.......	1.16 lbs.	1175
8 in.......	2.5 "	1200
12 in.......	....	....
18 in.......	4.3 "	950
24 in.......	4.5 "	750

SECOND SEEDING. May 26th.

Hall's Westbury, Rennie.

Distance apart	Ave. weight of root	Bushels per acre
12 in.......	4.25 lbs.	1400
18 in.......	4.0 "	870
24 in.......	5.0 "	815

White Globe, Ewing.

Distance apart	Ave. weight per root	Bushels per acre
8 in.......	2.74 lbs.	1325
12 in.......	3.2 "	1050
18 in.......	3.5 "	750
24 in.......	4.25 "	700

Fertilizer Experiment.

The only fertilizer experiments conducted were with the potato crop. The soil, which is light and sandy, has been under cultivation for only a few years. In the season of 1912 no manure or fertilizer was applied, the crop being wheat and oats. This followed a root crop in 1911 which was fairly heavily manured with barnyard manure and fertilizers supplying mainly phosphoric acid and nitrogen.

The plan of experiment was as follows:—the land was divided into four plots with blanks between, these blanks being fertilized and planted the same as the plots. Fifteen varieties of potatoes were used in the experiment, each of the varieties being planted on each fertilizer. The varieties were then harvested and weighed separately. In this way the same fertilizer test was tried on each of the fifteen varieties and the value of each variety under different conditions of soil was tested.

Following are the kinds and amounts of fertilizers used in the experiments. It will be noticed that no attempt was made to test special fertilizers, the sole effort being to find the amounts of nitrogen, phosphoric acid and potash likely to give best results on this soil under our conditions.

Fertilizer No. 1—100 lbs. Nitrate of Soda per acre.
400 lbs. Acid Phosphate. “
100 lbs. Muriate of Potash. “

Fertilizer No. 2—200 lbs. Nitrate of Soda per acre.
800 lbs. Acid Phosphate. “
200 lbs. Muriate of Potash. “

Fertilizer No. 3—300 lbs. Nitrate of Soda per acre.
1200 lbs. Acid Phosphate. “
300 lbs. Muriate of Potash. “

Fertilizer No. 4—300 lbs. Nitrate of Soda per acre.
1200 lbs. Acid Phosphate. “
No Potash.

These fertilizers are in the proportion of one, two, three and three without potash.

The results were as follows,—twelve out of the fifteen varieties gave results decidedly in favor of number two over number one. The other three varieties, being very inconsistent in their results all through, were discarded from the test altogether.

Number four, having no potash, fell decidedly below number three which had the same amounts of nitrogen and phosphoric acid. Number two excelled number four by a good margin, in all but two cases, thus dropping number four down to very little better than number one. This shows a considerable benefit from potash fertilizers for the potato crop on this soil this season.

Results in General. Number one gave decidedly poorer results than number two. Number two slightly poorer than number three but not enough to pay for extra fertilizer in number three. This would indicate that the most economical amounts of fertilizer used would be about that of number two.

The application of potash was attended with good results. It is doubtful if the absence of either nitrogen or phosphoric acid in the fertilizer would have had any more unfavorable results. It must be borne in mind however, that these are only the results of one year's work and that the potato crop is particularly dependent on a good supply of potash. In the past, potash manuring for ordinary crops on this Farm has not given marked returns.

Reports of Experimental Union Work.

Four distinct experiments were carried on by our Experimental Union members during the past season. These were,—the growing of Alfalfa; growing of mixed grains against grains grown singly; a trial Westernwolths Rye Grass, a type of Italian rye sent us from Holland; and an experiment in thinning of roots to different distances apart in the row. For the alfalfa, rye grass and grain experiments, we supplied the seed but we asked the farmer to use a section of his own farm crop for the fourth.

Some forty-five farmers undertook one or more of these experiments and we received replies from thirty of them. Some were unable to carry their experiments to completion while in other cases crops were destroyed.

The following reports were sent in:—

Alfalfa. Sixteen men reported, fourteen having a good catch of crop which grew well through the summer with one exception. In one case the alfalfa grew three feet in height. The land on which best results were obtained was deep, medium to light soil and was well fertilized with phosphoric acid, lime, and in some cases with potash in the form of wood ashes. The unanimous report is that with nitro culture the crop did far better than without, while one experimenter reports still better results from the use of inoculated earth, taking this from a field which had previously grown alfalfa.

Mixed Grains. Only five men reported and results were not unanimous. Bad weather conditions during harvest made true results difficult, in many cases impossible, to get.

Westernwolths Rye Grass. Nine men reported. Seven of these speak highly of the grass, having had yields of from two to three and a half tons per acre. The general opinion is, however, that it will not replace the vetch though three of our experimenters claim better returns than from oats, for hay or soiling purposes.

Root Thinning. Nine reports were received. The recommendation for from ten to twelve inch thinning was general, two experimenters recommending fourteen to fifteen inches and two, eighteen inches apart.

Following are the results of five experiments:—

Name and Address	Date of Seeding	Date of Harvest	Bushels per acre 4′ apart	8″ apart	12″ apart	18″ apart
J. E. Harrison, Maccan, N.S. . .	June 15	Nov. 5	495	620	837	830
Arthur Illingworth Fredericton Jct. N. B.	June 15	Nov. 3	750	775	750	700
C. E. Wright, East Dalhousie, N.S.	June 14	Nov. 11	630	735	865	1180
W. G. Graves, Aylesford, N.S.	June 5	Nov. 7	891	705	682	525
Guy Denton, Rossway, N. S.	June 18	Nov. 4	. . . .	1500	1700	1750

It will be noticed that the larger the crop on the field, the better the return from the wider distance and vice versa. This supports the practices of men engaged in root growing in our province which is, where large crops are grown, the distance apart is usually greater than where smaller crops are grown and it would seem that the practice might be profitably varied with the conditions.

Report of Drainage Work.

In my report for the season of 1912 I mentioned the great interest being taken in the question of underdrainage throughout the province. That this interest is growing in strength and intelligence cannot be doubted. During the past season, very few drainage surveys have been made, only two weeks out of the whole season being devoted to that work. This was not due to lack of work to do, as I have received more requests in 1913 than in 1912, but during the months of July and August, which I had expected to devote to surveying, the ditching machine was operating on this farm and I was engaged in laying out that work. Some twenty thousand feet of drain was put in, including four thousand feet in marsh land and almost five thousand in property recently bought for the Horticultural Department. Some of this work was done on land so soft that the tile had to be carried to the machine instead of being hauled there with teams. This gives some idea of the adaptability of the machine to adverse conditions.

As already stated, a large number of requests have been made for surveying work. These are being held over until the coming season. Whether or no this part of the work expands will depend upon the employment of men to cover it and not upon the interest taken by the farmers as they are asking for it from all quarters. A very large field of usefulness is now open to our Department along this line.

In conclusion I wish to acknowledge the aid given me by the Horticultural Department in supplying me with men and teams for my work. The potato experiment referred to previously was handled jointly by the two departments and as such is reported here.

Respectfully submitted,

B. H. LANDELS.

PART 7—POULTRY DEPARTMENT.

Truro, N. S., January 13th, 1914.

Prof. M. Cumming,
Principal Agricultural College,
Truro, N. S.

Sir:—I have the honor to submit herewith my 12th annual report as Manager of the Poultry Department.

The interest taken in the work of this Department has shown an increase during the past year. I have visited more places and gave more assistance throughout the Province to persons interested in poultry work than has ever been done in any year in the past. The prices of poultry and eggs have maintained the high mark which they have held in the past and have, no doubt, induced many persons to keep poultry to provide for their own tables, fresh poultry and eggs.

I wish to convey my sincere appreciation of the very generous manner in which the Poultry Department has been dealt with by the Federal Department of Agriculture. The amount placed at my disposal was of great assistance in carrying out the policy of organization and instruction which we had undertaken some years ago. Two hundred more coops have been purcheased for the holding of poultry shows, and models of houses, trap-nests, etc., were made and taken to the Fall Exhibitions and Winter Poultry Shows. These models enabled me to inform interested persons how to construct the best and most improved houses, etc., in a very plain and simple manner.

During the Short Course held at the College in January the poultrymen attending organized "The Nova Scotia Poultry Association." An Act was drawn up and submitted to the Members of the Provincial Legislature in Halifax and passed on the 13th day of May, last. The Act approves for the formation of this Association, and provides generously for the carrying out of the purposes for which it was organized. I would like to draw the attention of the people of the Province to the following sections and sub-sections of the Act:—

Sec. 10. The Governor-in-Council may annually grant for the use of the Association such amount as is found necessary for the purposes thereof, not exceeding in any one year two thousand dollars.

Sec. 11 (1) Out of this grant the Association may use an amount not exceeding $100.00 to be used to defray part of the expenses of meetings of this Association, or of the Executive Committee of the Association.

(2) The balance may be paid upon recommendation of the Executive Committee of the Association to Poultry Clubs organized by the Association for the purpose of assisting such clubs to hold local Poultry Shows or to carry on such other work as may be approved by the Provincial Association for purposes of promoting the poultry industry.

(3) The grant which may be alloted to a Poultry Club or Clubs in any one county shall be two-thirds of the prize money paid at a poultry show or shows held by the club or clubs, or expended in carrying on work approved by the Provincial Association within the county. But in no case the appropriation in any one county exceed one hundred dollars.

(4) Where only one club exists in a county, the total appropriation for the county shall be available for the use of that club. Where more than one club exists in a county, the grant shall be divided upon a basis of prize money actually paid out or expenditures actually incurred in carrying on work by the Provincial Association.

Poultry Clubs have been formed in seven counties of the Province, and shows have been held or will be held in every county organized. In Cape Breton County two clubs are formed and each will hold a Poultry Show.

On behalf of the Poultrymen of the Province I would like to add here a word of appreciation for the very generous manner in which the members of the Provincial Legislature granted assistance to the work which this Association has undertaken. Much improvement in the qualtiy and quantity will result from the holding of local poultry shows.

The unorganized counties will be visited in the near future and all possible assistance will be rendered.

During the year I forwarded to persons in different parts of the Province blue print plans of different kinds together with a list of materials required to aid in construction. I have met persons in many parts of the Province who have constructed houses according to the plans supplied from us and they report entire satisfaction in the use of their houses. The demand for plans of the trap nest and brooder was not as great as the previous year but we supplied more plans of houses than in any year since we began to put the plans out into the country. The following is a list of the different kinds and number of plans mailed from this Department during the past year:—

Two pen House Plan	120
Maine Trap Nest	35
Movable Colony House	43
Two Compartment Brooder	7
	205

The Fifth Annual Exhibition held on November 26, 27 and 28, of the Egerton Poultry and Pet Stock Association was a very successful effort and the entries were larger than any of their previous shows. The quality was a marked improvement on what had been shown in the past and some stock from this show won the highest premiums at the Maritime Winter Fair. The weather proved more favorable this year and a much larger attendance was in evidence, resulting in a far more satisfactory financial showing. The number of fowls exhibited was nearly eight hundred, and besides a very fair display of dressed poultry and eggs.

The Yarmouth County Poultry and Pet Stock Association held their Second Annual Show on December 18th and 19th. The exhibit of stock was not large but some good quality was in evidence. If one may judge by the interest taken in this show by the farmers and poultrymen of Yarmouth County, a great improvement will surely result from the holding of this show. About three hundred fowls were exhibited and also a very fair exhibit of dressed poultry and eggs. The management and care of the exhibits were a great improvement over the initial effort of the previous year. This Club also held a Poultry meeting during the year at which I gave an address on Poultry Raising.

On August 6th I addressed a meeting of poultrymen and farmers at Glace Bay and at the close of the meeting organized a Glace Bay Poultry and Pet Stock Association. The interest taken in the work of this Club was remarkable. The officers elected went to work in earnest and on December 3rd to 5th held their first show. Nearly all the officers had little or no previous experience and the show exceeded all expectations. About 350 fowls were exhibited, besides a fair exhibit of pet stock and Bantams. This Poultry Club has been the means of interesting a great many people from the mining towns in poultry keeping. The building which was selected was too small but expectations were more than realized in this initial effort.

On October 27th I held a meeting at Windsor and organized a Poultry Club for the County. This Club is very active and dates have been selected for the holding of a show in the near future.

On the following evening a meeting was held at Kentville and a Kings County Poultry Club was formed. This Club has selected dates for their show and it is expected that the interest will be aroused by the holding of their first poultry show.

A meeting was held at Antigonish on August 27th for the purpose of forming a Club and everything has gone well with this Club. A show is to be held in connection with the Seed Fair at a very early date in the future.

The Club organized at North Sydney held a very successful show early in the year and is in line for another, the third annual, to be held at Sydney Mines early in the coming year.

The record sheets which we have forwarded for several years past were discontinued this year. We have received a good many reports from persons who kept records during the year, but space does not permit including the results in this report. It is, however, very satisfactory to know that we have in the province obtained results in egg production equalled to the very best obtained anywhere.

The results which were obtained by Mr. Crowell, of Arcadia, Yarmouth County, from his flock of Barred Plymouth Rocks have created somewhat of a sensation from the remarkable manner in which they laid during the past year. One hen, "Lady Morely" No. 208, laid from September 19, 1912, to September 29, 1913, 292 eggs. This is acknowledged by the Editor of the American Poultry Journal as the best authentic record of egg production in the world. Mr. Crowell has also a pen of seven hens which have made some remarkable records in egg production. The results which have been accomplished by Mr. Crowell are obtained by careful selection and the use of trap nests to detect the unproductive fowls, together with good feeding and proper housing. His success has not come about during the past year alone but has covered a period of several years and generations of fowls systematically selected each year.

During the past year I judged the poultry exhibits at Exhibitions held at Stewiacke, Colchester Co.; Pictou, Pictou County; Sydney, C. B.; Antigonish, Antigonish County; Guysboro, Guysboro County; Windsor, Hants County; and Digby and Little Brook, Digby County. I also judged the poultry exhibits at the Provincial Exhibition for New Brunswick held at Fredericton, and for Prince Edward Island at Charlottetown. Also acted as Superintendent of the Poultry at the Provincial Exhibition at Halifax and the Poultry Show in connection with the Winter Fair held at Amherst.

Permission was obtained and I visited St. John's, Newfoundland, to judge the exhibits of poultry at their show. The result of the spirit of friendly competition was in particular evidence there. The increase in exhibits was over eighty per cent. more than the previous year, and the quality showed very marked improvement. The exhibitors were in earnest and at the close of the show many expressed themselves in terms not to be mistaken that they would secure the highest prizes for their stock another year. One may look to St. John's, at no very distant date, to secure as good poultry for utility or exhibition purposes as can be found anywhere.

The egg circle formed in connection with the Scotsburn Creamery Company has been in successful operation during the past year. The eggs marketed from this circle have brought the patrons a fancy price, and the consumer has been very highly pleased in the improved quality of the eggs over those purchased from the store where regard is not taken to handle them properly. The eggs sold by this circle were readily disposed of and during Spring months as many as three hundred dozens per week were handled by the Company for their patrons. A number of the patrons of the same Company who deliver their cream at the Meadowville Station formed an egg circle with similar satisfactory results.

A great deal of work is to be done in our province to induce our poultrymen and farmers to place their poultry products on the market in better condition. A great deal of good poultry is ruined by improper killing, and in many cases poultry is scalced to assist in removing the feathers. the scalding destroys the natural color of the fowl and makes it look as though it were undergoing decay. Dry picking has the advantage of giving the fowls a much fresher and whiter appearance. The picking should be done while the fowl is yet warm after killing and when done in this way it is very much easier to pluck the fowl.

The extra returns from well fattened and properly dressed poultry over that which is indifferently prepared for market will very well repay the person who will give the matter some attention. The well fattened and dressed fowl is selected by the consumer every time and while it may not be as good poultry the dressing is always against it in the eyes of the consumer. A very good plan is to shape the birds after plucking into a square uniform shape. This is accomplished by placing the fowl while warm after plucking into the shaper. The shaper is made by nailing two boards together at right angles and placing them on some support. As each chicken is plucked its legs are drawn up close to its body and placed in the shaper breast down. A brick is laid on its back which forces it into a square uniform shape. As each fowl is added another brick is placed at the side of the last fowl in the shaper. When the fowls have cooled in this manner they are removed and hold their shape until marketed.

I addressed meetings on the subject of Poultry raising at the following places during the past year.—Yarmouth, Grand Mira, Glendale, River Denny Mountain, Port Hood, Little Brook, Meteghan, Salmon River, P. E. Island, Short Course, Charlottetown, Windsor, Kentville and Antigonish.

The meeting which was held at Glendale, C. B., was for the purpose of interesting persons in the work of the construction of a modern type of poultry house. On the days following the meeting, was engaged in the construction of the poultry house. It is our intention to place a flock of pure bred fowls in the house which will be open for inspection at any time to persons who are interested in poultry in the neighborhood. In other sections of the province where the work has not been given consideration by farmers a similar illustration poultry house will be erected as soon as the work can be overtaken. I am very much in favor of this means of imparting information to a neighborhood and our plan is much more effective than the holding of many meetings.

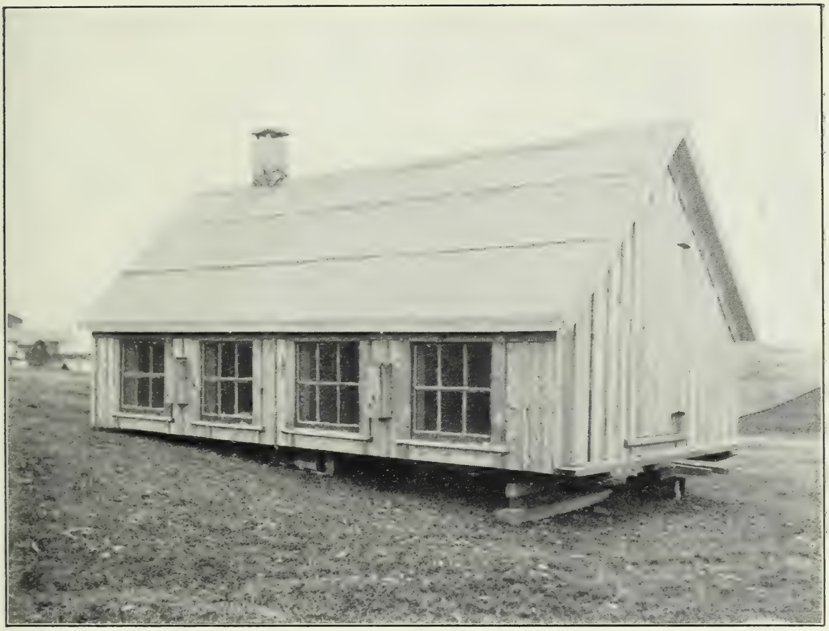
Another plan which I am pleased to learn is to be adopted and made of assistance to this department is that of supplying settings of eggs to the school children attending the Rural schools of the province. The details are not yet completed but will be arranged in season for the spring hatching. It is a plan which will induce a great many to take a lively interest in the work.

During the year we raised at the College plant 816 chickens and 40 ducks. The chickens made very good growth and were sold as here-to-fore. The hatching was continued later in the season than we had done in former years.

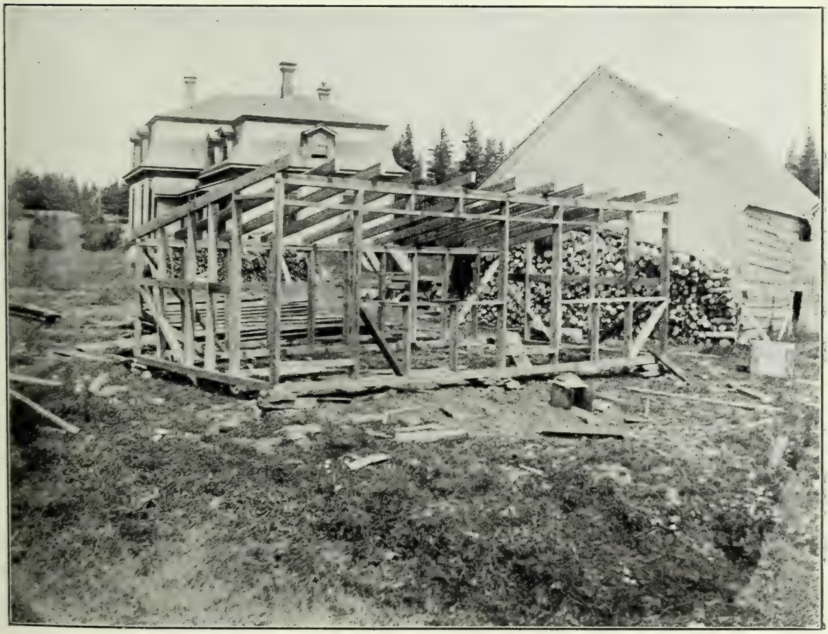
We built a small brooder house 20 feet by 10 feet, illustrated herewith, and had it equipped with a Simplex Brooder Stove. This stove is constructed with heavy cast iron base and burner having cast iron legs. The body is made of sheet steel. The fumes and all gases from the burner are conducted out through the roof of the building by means of a 5 inch stove pipe. An oil tank fastened onto the outside wall of the building and connected with the stove by means of a 1-4 inch gas pipe conducts the oil to the stove. The chicks when ready to retire are attracted to the stove by the heat. When they find the place is comfortable they sit down and soon the chicks are in a large ring around the stove in the zone of comfortable heat. There is no hover of any kind and the room is heated to a temperature of 90 to 95 degrees.

Ventilation is provided by four openings in the walls of the building. The openings are boxed over in order to prevent a direct draft of air getting to the chickens. A ventilator pipe 12 by 12 inches is placed in the ceiling and out through the roof. Foul air is carried off by means of this pipe and fresh air is admitted by means of the ventilators at the sides of the building. The chicks are thus kept in warm fresh air at all times by day and night. During stormy weather the attendant may step into the house and can see at a glance if the chickens are all comfortable. In the case of the smaller brooders it is always a great hardship when a storm comes on to protect the little chicks from the cold wind and rain. Frequently the wind would cause the lamp to go out and before morning the chicks would be chilled beyond recovery. With this new brooder house, we have overcome all these difficulties and have had better success raising chickens by this method than by any other we have used. I believe it to be the best method yet adopted anywhere for brooding young chickens. We have not had a case of the "White Diarrhoea" among the chicks this year and a healthier lot of young stock would be hard to find anywhere.

After the chicks are thoroughly nest ripe and dried off they are removed to the brooder house. The floor is littered with dry sand and chaff and a box of coarse bran is placed on the floor. The box is low on the edges so as the chicks may readily get into it and fine chick feed is scattered into the litter. A dish of clean water is provided and for twenty-four hours all that is necessary for



Simple Brooder House 10′ x 20′. Capacity 800 Chicks.



1 Frame Construction of 2 Pen Farm Poultry House.

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their comfort is to provide a room temperature of about 90 degrees in day time and 100 degrees during the night.

The chick feed is provided in the litter on the floor of the brooder house with water and grit before them at all times. Care and attention are required to keep them growing and every day when fine and warm they are allowed out of the house for a run on the fresh clean grass. The chickens under this system made good growth and the loss was very small.

In conclusion I wish to express my sincere appreciation of the many evidences of interest which you have taken in the work of this Department. By your advice and assistance a great deal has been accomplished which has met with the approval of the farmers and poultry men of the province.

All of which is respectfully submitted.

J. P. LANDRY.

PART 8—REPORT OF THE SUPERINTENDENT OF DAIRYING.

Prof. M. Cumming,
Secretary for Agriculture,
Truro, N. S.

Sir:—I have the honor to submit my Second Annual Report in connection with the Dairy Industry for the year ending December 31st, 1913.

As mentioned in my last Annual Report, we held a Convention of the cheese factory and creamery men at the Agricultural College during the Short Course in January, which was represented by delegates from nearly all the most important cheese factories and creameries in the Province. Here the men met each other on a common ground for the first time and if nothing further was accomplished, the fact that they got acquainted lent some stimulus and encouragement. The principal business dealt with was an effort to get better refrigerator car service for butter, the sanctioning of holding a Dairy Herd Competition; a system whereby all the factories received a weekly report of the average selling price of dairy products in the Province and the condition of the markets outside the Province; and arrangements for organizing a Dairymen's Association at the next Annual Meeting.

The season of 1913, as far as climatic conditions were concerned, was about an average one.

The output of cheese and butter manufactured at the cheese factories and creameries again shows a decided increase over the previous year, this being the sixth year in succession that such has been the case for butter, and this year the increase was the greatest of any. the value of the butter manufactured being 49.8 per cent higher than in 1912. Owing to the fact that one cheese factory was closed during the year, the make of cheese again shows a decrease, but two factories show an increase, the Malagash Cheese and Butter Co. showing quite a decided increase and the Lawrencetown factory a small increase. It is doubtful if the manufacture of Cheddar cheese will for a long time be very popular in most parts as the conditions are not favorable to it, but there are some parts no doubt where that cheese is more applicable than butter.

On the other hand, nearly all the creameries showed a substantial increase and this was quite noticeable among

The La Have Creamery, Bridgewater, erected during the fall of 1913.

the old ones, Scotsburn again taking the lead not only in the Province but also in the Maritime Provinces.

The two creameries that began operations in 1912 showed remarkable gains, Yarmouth increasing from 66,503 lbs. to 169,017 lbs., and River Hebert from 14,959 lbs. to 44,280 lbs. Both of these creameries can now be considered on a good sound footing with good prospects for the future.

Three new creameries began operations during the year, one at Loch Katrine in Antigonish County, began operations about the 28th of June and made a creditable showing for the short time in operation, having to close for the winter about the 1st of November. This creamery, situated so far from the railroad, will come under the heading of a local creamery, but can operate over a section of country from ten to twelve miles around, and ought to be a great success in a few years.

Two creameries were established among the French people in Digby County, both being owned by co-operative companies, and promise to give a great stimulus to the industry there. They have already done very well.

For 1914, there are three new creameries under way, one at Stellarton, Pictou County, one at Bridgewater, in Lunenburg County, and one at Baddeck, Cape Breton. The two former are owned by co-operative companies and all their buildings are now well under way so that they will be prepared to begin operations in the early spring. I prepared the plans and specifications for each of them and both are built on the same plan. The accompanying cut shows the one at Bridgewater taken about nine weeks after the contract was let, showing that the work was done with despatch.

Realizing that there are immense possiblities in Cape Breton for the development of co-operative dairying, and in view of the fact that up to the present time the business has not been made a success, it was thought that it would be unfair to the people there to ask them to organize as they are doing in other parts of the Province and to build their own creamery. This would also prove expensive to the Department to make it a success but could be worked out more economically by first establighing one Demonstration Creamery on the Island to show the possibilities of the business. With this end in view, an offer was made to the farmers surrounding the Bras D'or Lakes that, if they would promise the support of 400 cows and guarantee to take the business off the

Department's hands at the original cost when it was made a financial success from a manufacturing standpoint, the Department would establish and operate at least one such creamery. This offer was readily taken up by about 100 farmers and the building at Baddeck is now nearly completed and operations will commence in the spring.

The policy of the Department in this, as in all other parts of the Province, will to be centralize the work as much as possible, gathering the raw material for as great a distance as can be done economically thus making the assurance of success much greater.

My time during the summer was spent as much as possible among the different creameries at inspection and instruction work, but on account of the development taking place, a great deal of time had to be spent at prospective work and in the organizing of the new companies. I held 41 public meetings, called at many farm homes to discuss dairy problems and attended as many of the exhibitions as possible, judging the dairy produce.

Dairy Herd Competitions among the patrons of cheese factories and creameries during the six months resulted as follows:—

Prizes of $30, $20, $15, and $10 were offered to the patrons who supplied the most butter fat per cow, under certain rules and regulations. The following were the winners:—

First Award—Frank H. Bath, Bridgetown, Annapolis County; Factory—Woltville, No. cows—7, Total lbs. fat—1273.5, Average per cow—181.1.

Second Award—Murray Crosby, Dayton, Yarmouth County; Factory—Yarmouth, Nol cows—10, Total lbs. fat—1611.7, Average per cow—161.1.

Third Award—H. M. Tattrie, River John, Pictou County, Factory—Scotsburn, No. cows—7, Total lbs. fat—843, Average per cow—120.4.

Fourth Award—R. B. Whitman, So. Williamsotn, Annapolis County, Factory—Lawrencetown, No. cows—16, Total lbs. fat—2893.1, Average per cow—94.

Smith & Proctor, Halifax, also donated a gold medal to the First Prize Herd.

All the new creameries in operation received the usual bonus from the Department, as well as some special bonus in cases where it was thought justifiable.

From a manufacturing standpoint at the present time the Province is very well served and the industry is in good condition with very few parts of the Province that are not within a reasonable distance of a good creamery and with more co-operation to make the output larger, the cost of manufacturing could be reduced considerably.

The good results of the work done by the travelling dairy that went through the Province for a number of years is still very evident and the quality of the dairy butter manufactured shows a good uniformity all over the Province. I spent very little time in connection with home dairy work but it is evident that there are some few sections where conditions are such that the work will have be carried along these lines and no doubt some good work can still be accomplished in these centres along the lines of practical demonstration in Buttermaking and Milk Testing.

It is no doubt time that we had some good effective Dairy Legislation in the Province respecting the bonusing, operation and sanitation of the different cheese factories and creameries, and I would consider it wise to make an effort to have the same brought before the next session of the Local Legislature.

The weak part at the present time is the production end and perhaps at no time in the history of the Province has the dairy industry been in a more critical position, due to the fact that the average cow in the Province is not producing over 3300 lbs. of milk per year and, although the prices of Dairy products were never as high as during the last two years, still after allowing the food cost of keeping the cow at a fair market value, it does not leave a satisfactory margin of profit to the owner, and as long as conditions such as these exist the cow owner is not going to be very enthusiastic.

The Department has, and is spending much money in getting established a chain of up-to-date sanitary creameries for the manufacture of these products and a still greater amount for the production end through the well-organized system of Agricultural Societies in nearly every rural section, where the greater proportion of the money spent goes to buying improved dairy sires, and the solution of the problem seems to be through this source, a more hearty co-operation through the creameries on the manufacturing end and a still greater co-operation through the Agricultural Societies for the production end, to get the people to put the dairy herd on a better business basis by finding out their poor cows by testing, weeding them out as rapidly as possible, with better feeding and breeding to better stock through the Societies, the average production could be easily put to 6000 lbs. in five or six years.

In this respect my thanks are due to the Dairy Division of the Department of Agriculture, at Ottawa, and to Mr. Harvey Mitchell, their representative in the Maritime Provinces, for very much assistance along this line, and also to Messrs. C. W. MacDougall and L. C. Daigle, the Dairy Superintendents for New Brunswick.

To the Federal Government and to yourself my thanks are due for the portion of the Federal Special Aid to Agriculture that was apportioned to Dairying. This made possible work that otherwise would be difficult to accomplish.

To the Honorable Mr. Murray, Premier of Nova Scotia, and yourself for the active part taken in dairy interests during the year and for the willingness with which any recommendations I have made for the expenditure of monies were responded to, and for all the assistance in many other ways, my thanks and appreciation are especially due.

In the following pages will be found a detailed statement of the business done by the different cheese factories and creameries during the year. By making comparisons with last year, very decided gains will be noticed, the total value of butter made being $194,802.46 as compared with $130,076.17 for 1912; Cheese $19,786.04 as compared with $26,858.04. Improvements made, $13,375.00 as compared with $8,375.00 in 1912.

In conclusion, I wish to express my thanks and appreciation to all who have assisted me in my work throughout the year and especially to the different cheese factory and creamery men for the many kindnesses extended to me during my different visits with them.

All of which is respectfully submitted.

W. A. MACKAY.

REPORT OF CHEESE FACTORIES AND CREAMERIES, 1913.

COUNTY	NAME OF FACTORY, OWNER SECRETARY OR MANAGER AND P. O. ADDRESS.	No. of Patrons	Lbs. of Milk Received	Lbs. of Cream Received	Lbs. of Butter Made	Lbs. of Cheese Made	Value of Cheese or Butter made	Value of Improvement made
Annapolis...	Lawrencetown C. & B. Co., J. B. Jefferson, Secy., Lawrencetown..........	50	......	....	8900	32000	$6135 00	$375 00
Antigonish..	Argyle, Geo. Vinten, Lr. South River..	14	138650	......	......	*12600	....	....
	Erinville ” ..	20	110200	......	......	*10100	....	....
	Glassburn ” ..					*12000	....	....
	Marydale ” ..	21	201540	......	......	*18320	....	....
	Up. South River ” ..	20	160256	......	......	*14568	....	....
	Up. South River Creamery Co., Ltd., Rev. A.A.McLeod, Loch Katrine....	76	......	102400	25000	......	6500 00	4500 00
Colchester..	Brookfield Creamery Co., R.B.McLennan, Owner, Brookfield.............	60	205700	100000	23445	......	7250 00	25 00
		als	o25280	qts. cr	eam.	800 qt	s Ice Crea	m.
	Economy & Bass River C. & B. Co., S.H.Fulton, Secy, Little Bass River.	45	250997	35888	19907	......	5534 00	200 00
	Glenholme Creamery, T.D.Blaikie, Proprietor, Great Village.............	30	283989	......	14199	......	3975 12	200 00
	Great Village Creamery, T.C.Blaikie Proprietor, Great Village..........	40	628939	......	31446	......	8804 88	100 00
Cumberland.	Malagash Cheese & Butter Co., J.T. Treen, Secy., Malagash Centre......	37	494369	......	......	47528	6189 60	75 00
	Cumberland Co-op. Creamery Co., Ltd., W.A.Landels, Secy., River Hebert...	78	......	145662	44280	......	11944 16	....

REPORT OF CHEESE FACTORIES AND CREAMERIES, *(Continued.)*

COUNTY	NAME OF FACTORY, OWNER SECRETARY OR MANAGER AND P. O. ADDRESS.	No. of Patrons	Lbs. of Milk Received	Lbs. of Cream Received	Lbs. of Butter Made	Lbs. of Cheese Made	Value of Cheese or Butter made	Value of Improvement made
Digby......	Clare Creamery Co., Ltd., L.C.LeBlanc, Secy., Meteghan River............	110	......	43080	14909	......	3858 53	2400 00
	La Societe De Industrie Lacture, Ltd., Zacharie Melanson, Secy., Meteghan.	90	252131	....	13337	......	3407 18	3500 00
Kings......	The Acadia Dairy Co., Ltd., A.M.Wheaton, Secy., Wolfville...............	120	......	300000	60000	......	16800 00	....
	The Acadia Canning & Creamery Co., Ltd., G.R.Toole, Mgr., Kingston....	No	report	......	23300	......	6524 00	....
	Fairview Farm Creamery, Illsley Bros., Props., Berwick..................	60	......	122000	32522	......	10000 00	....
Pictou......	The Scotsburn Creamery Co., Ltd., Robt.T.Stewart, Secy-Mgr., Scotsburn...........................	400	......	724712	228750	......	61000 00	450 00
Yarmouth...	Yarmouth Creamery, Ltd., F. E. Porter, Managing Director, Dayton........	316	......	507051	169017	......	*45634 59	550 00
					709012	147116		

Those marked with *estimated from best figures obtainable.

PART 9—REPORT OF THE VETERINARY SCIENCE AND HORSE JUDGING DEPARTMENT OF THE AGRICULTRUAL COLLEGE AT TRURO FOR THE YEAR 1913.

M. Cumming, B. A., B. S. A.,
Principal Nova Scotia Agricultural College.

Sir:—I herewith submit a concise report of my work at the College during the year 1913.

I arrived at the College on January 5th and immediately commenced teaching the regular and Short Course classes using the College Farm horses and procuring many outside animals to demonstrate desirable characteristics in each class as well as unsoundnesses, such as Ring Bone, Spavin, Curb, Sidebone, Bog Spavin, Throroughpin, Sprung Knees and many other diseases. I pointed out the forms of parts most susceptible to disease, giving the causes and best methods of prevention, also most suitable remedies where disease exists.

To the full term class, I gave instruction in the anatomy and physiology of the horse, as well as comparative anatomy and physiology as fully as time would permit, also the controlling of domestic animals for simple operations such as agriculturists should perform; the action and uses of many medicines and the best methods of administering the same; first aids in emergencies. During the term examinations were held in which the students demonstrated advancements and at the final examination before the close of the term many of the students evidenced the acquisition of a considerable veterinary knowledge. There was also a judging examination for which many horses unknown to the students were procured and several of the students gave evidence of their ability to judge intelligently and I am pleased to know that many of them are competent to judge at public shows, in fact more competent than many who are now officiating, the students having studied the science, something which many of the older judges never did.

I also addressed agricultural meetings outside of the College at which I gave advice in regard to some of the difficulties confronting farmers. I visited several farms giving advice regarding breeding and management of stock as well as prevention and care of several diseases. I was requested to visit other districts but want of time would not permit.

Owing to a discussion of Tuberculosis arising in the House of Assembly at Halifax, I, at considerable inconvenience to myself, remained here longer than was intended. I visited Halifax expecting to be examined by a Committee of the House, but they did not examine me nor could I find when they would require me. So I returned home. I am pleased to learn that the discussion has had a beneficial effect in many ways. First, by drawing public attention to the condition existing in this and every other Province in Canada regarding the prevalence of tuberculosis in cattle and the necessity for food inspection. Truro has since appointed an inspector and is paying a salary, while perhaps not enough to enable him to devote all his time to inspecting, still sufficient to allow some compensation for the work required, and I hope all other municipalities will see fit to appoint capable inspectors and that stock owners will have their herds tested by regular inspectors and be governed by their advice.

I also replied to many letters of inquiry concerning diseased animals during the College term, and to forty-three such letters while at home during the summer.

All of which is respectfully submitted.

J. STANDISH, *V. S.*

PART 10—WOMEN'S INSTITUTES.

To M. Cumming, B. A., B. S. A.,
Truro, N. S.

Sir:—I have the honor to submit the first report from.. the Women's Institutes organized in Nova Scotia during the summer of 1913.

In July the Department secured Mrs. Laura Rose Stephen of Huntingdon, Que., with whom I had the pleasure of being associated, to introduce the objects and aims of the Institute, as carried on in other provinces to the women of Nova Scotia. Eight districts in Pictou, Colchester and Cumberland counties were visited and in each it was found that the ladies were willing and in many cases eager, to join. In each district, with one exception, two meetings were held which were very well attended. As a result eight institutes were organized with capable officers and an average membership roll of sixteen.

In September, Miss Susie Campbell of Brampton, Ont. accompanied me through the counties of Hants, King's and Annapolis. We held meetings in ten places and were successful in establishing six Institutes, under very favourable circumstances. While not meeting with the complete success of the first campaign I think we have every reason to feel proud of the result.

During the last Short Course the first Convention of Women's Institutes in Nova Scotia was held with an attendance of twenty-seven delegates, which would have been increased to thirty-two, if a heavy storm had not prevented two Institutes from sending their representatives. Five meetings were held at which interesting and instructive lectures were given and reports from the Branch Institutes were read. These reports were hightly gratifying and very encouraging and I consider the work already.. accomplished during these few months nothing short of marvellous and it certainly justifies the step taken by the Department. The average membership roll is about twenty-five, one Institute boasting thirty-nine and another falling as slow as twelve but those in between come nearer to the maximum membership.

The future promises well and when the organization has attained the age of one and one-half years, I feel sure that the Department will have still greater reason to feel proud of this, its latest addition. As interest in the Institute spreads, new and broader lines of effort will open up for the members and mutual help, encouragement and instruction in those things which go to the development of the best and truest life in a community and the higher standards of living will be freely offered and gladly accepted.

In closing I wish to thank you for your kind consideration and the great assistance rendered me in this new work, which has proved extremely interesting and gratifying.

Respectfully submitted,

JENNIE A. FRASER.

Report of the Chemist.—Part 11.

L. C. Harlow, B. S., B. S. A.

The Soils of Nova Scotia.

A knowledge of the soil is essential to sane methods in Agriculture.

It is true that years of experience in farm practice have given certain methods of dealing with conditions characteristic of various soil areas, yet the age demands not only "the why" of these practices but also improved methods.

Is our knowledge of the soil complete? One writer says, "The soil is so complex in its relation to crops that it has been, and still is, one of Nature's greatest puzzles."

The complexity of the subject is evidenced by the marked contrast in views held by experts on soil fertility. The United States Bureau of Soils, at Washington, has, during the past fifteen years, taught that the soil storehouse of plant food cannot be exhausted; that a soil which refuses to grow potatoes, does so because it is filled with some substances poisonous to the potato, excreted by the roots of these plants growing year after year; that fertilizers are added to destroy these poisons.

Radically opposed to this view, is that held by the great majority of investigators that all plants do exhaust the soil and that, if food be not supplied as fertilizers, the plant dies. More knowledge is needed: study by the keenest eye and intellect is needed to solve some of the problems suggested by the soil.

Plants must be provided with certain quantities of **five elements**: Nitrogen, phosphorous, potassium, calcium and magnesium; if these be not present in a soil, either on account of their absence in the rocks which made the soil or from their being used by previous crops, it is worthless.

A chemical analysis gives the amount of any useful part of a mixture; hence, in the complex soil, analysis will reveal the presence or absence of the above five foods. The mine owner has his gold ore tested. If gold be not found, not a cent will he invest; if the gold be there it is his business to devise ways and means to get that gold out. The farm manager is just as much concerned with the amount of potash etc. in his soil and also with the ways and means of extracting or making available these plant foods.

Chemical analysis of a soil from a barren hillside in the Stewiacke valley shows:—

Potash	.276 per cent
Phosphoric Acid	.14 ,,
Nitrogen	.127 ,,
Lime	.2 ,,

These amounts would mean per acre one foot deep:—

Potash, 9660 lbs. at 5c. per lb	$ 483.00
Phosphoric acid, 4900 lbs. at 5c. per lb	245.00
Nitrogen, 4445 lbs. at 20c. per lb	889.00
	$1617.00

The problem then is to get out of the soil $1617 worth of plant foot; one would be justified in working such land.

Requests are often made for an analysis of a soil; of what value is such an analysis? It is a tedious and expensive operation. Does it give a ready means of determining how much crop return there will be or how much of a certain manure might be added? It does not.

Chemical analysis can show the **presence, absence** or **marked deficiency** of any necessary plant food but as yet the chemist cannot be **sure** of the **exact** amount of such food which a plant can get during a season.

Hopkins, the American expert says: "As a rule, the chemical composition of a normal soil is an exceedingly valuable guide in determining the kind of material which should be added in practical systems of soil enrichment and preservation."—Ill. Exp. station circular 155.

Director A. D. Hall, of England, says: "Chemical analysis will tell us (1) whether a soil is getting acid or needs liming; (2) what class of manures ought to be used, whether sulphate of ammonia or nitrate of soda, superhposphate or basic slag; (3) what particular deficiency or specific need there may be for phosphates or potash."—Jour. of Royal Agr. Soc. Eng. 1912.

Other countries are at present making soil surveys; accumulating information and data as to the nature and composition of known soils so as to have type soils; then when the reason for a soil not giving proper returns is called for a comparison with the type will help to solve the question, and also suggest the best treatment of such a soil.

In order to get some information which may be of practical use, on the value of Nova Scotia soils, one hundred and twenty five samples of soil have been collected, 85 of which have been studied. Particular emphasis has been put upon the chemical analysis and the relationship of the soil to the surrounding rocks, both native and drift.

Since taking up this work in 1908, eighty-six samples of soil have been subjected to complete analysis in this laboratory—thirty-five by Mr. K. H. Saunders during the summer of 1913, the remaining fifty-one by the writer. These were taken as follows:—

24 Marsh soils from various points between Kingsport and Windsor, along the Cobequid Bay and from the Amherst areas.

25 at various places along a line extending across the county from Tatamagouche to Middle Musquodobit.

12 from the Central part of Lunenburg County.
8 from the Annapolis Valley.
10 from the Wentworth Valley.
2 from the Government Farm, Truro.
2 near Antigonish town.
1 from Guysboro County.
1 from Digby County.
1 from Clifton, Colchester County.

This article will present results of the analysis with tentative deductions therefrom: it is expected that this work will be continued so as to include soils from all parts of the Province and special study of certain problems which at present can only be suggested.

Acid Soils.

A simple test for an acid soil is: Place a lump of damp soil on a piece of moistened blue litmus; a reddening shows the presence of acid. Out of sixty-eight soils from upland, intervale, and marsh so tested only ten showed no acid reaction and of these six were **new** marsh deposits; the four only cultivated soils showing no acid reaction were from areas giving good crops, in one case four tons of hay per acre. Many of the acid soils were from unused fields and some from geological areas showing much limestone rock. Now **lime** and **limestone** are the substances which will correct the acidity so we are, from this test, led to infer that our soils need additions of lime. The action of this substance in the soil is very complex and is arousing much attention among soil students.

While **good** soils differ in the amounts of the essential elements, yet the following standard from Professor Snyder, Minnesota Exp. Station might be taken for comparison:—

Potash soluble in acid	Phosphoric acid	Lime	Nitrogen
Good soil.... ·3-.6%	.15% if neutral or alkaline.	.3-5% if partly limestone	.2%
Poor soil..... .1%	.05%		.07%

Fifty Nova Scotia soils average 90 per cent of inorganic matter, that is broken rock, and 10 per cent. Organic matter and water. Of what does this 90 per cent consist? Soils are formed mostly of decomposed rocks: now most of our common rocks contain practically all the common rock forming minerals such as feldspar, mica, apatite, limestone, but in widely varying proportion: these facts at once suggest that each geological area may have its ype soil.

The following table compares soils of several geological areas:—

TABLE I.

Constituent		Ign.	Sil.	Permian		Carboniferous					Triassic			Cambrian	
	A	5	6	1	2	3	4	5a	7	8	9	10	11	12	13
Insoluble........	79.95	76.14	76.48	85.92	87.44	86.31	89.00	82.78	72.93	78.04	87.18	81.64	81.45	76.73	73.78
Potash..........	.29	.12	.36	.15	.11	.12	.13	.3	.5	.39	.26	.31	.41	.15	.3
Soda............	.25	.03	.06	.05	.09	.11	.08	.05	.04	.1	.4	.06	.01	.16	.3
Lime............	2.16	.38	.3	.3	.3	.29	.4	.17	.5	.27	.25	.3	.2	.3	.35
Magnesia.........	.55	.23	.42	.41	.72	.29	.52	.92	.49	.23	.28	.7	.83	.74	.38
Sulphuric acid....	.03	.18	.05	.08	.07	.07	.05	.11	.09	.08	.14	.07	.04	.08	
Iron oxide.......	2.68	3.15	3.28	2.65	2.80	3.10	3.40	3.63	3.05	3.45	2.74	3.40	2.90	9.1	2.5
Alumina.........	5.20	3.74	4.14	2.72	2.72	2.80	2.75	3.89	5.88	5.73	2.22	4.33	3.28		3.75
Phos. acid.......	.24	.11	.08	.08	.09	.15	.05	.18	.29	.19	.09	.22	.12	.002	.27
Volatile or organic	7.00	12.56	11.88	7.26	4.65	5.01	2.88	7.61	11.68	9.58	5.35	10.20	6.22	11.12	10.85
Moisture........		3.49	2.76	1.17	1.13	1.51	.76	.94	4.46	2.06	1.2		3.98	2.37	6.65
Nitrogen........	.29	.34	.18	.15	.08	.1	.02	.18	.24	.23	.14	.17	.1	.21	.34

EXPLANATION OF TABLE I.

A. Average of 200 United States fertile surface soils. Snyder, Minnesota Exp. Station.

No. 5—From the head of Wentworth Valley, Cumberland County, would be made up of debris from the Igneous rock of the Cobequids; organic matter is due to the field being used as pasture for a long time.

No. 5—The Silurian rock area in Nova Scotia is small: this sample from near Wentworth Station is a mixture of decayed Igneous rock, Silurian Sandstone and Drift. Nos. 1 and 2—are typical of the large Permian areas north of the Cobequids. No. 1 is a very productive hay field. No. 2 is virgin soil.

No. 3—is a fairly productive soil from Wentworth Centre, Millstone Grit area.

No. 4—is a subsoil from a model orchard at Aspen, Guysboro County.

No. 5a—is an average of 5 soils from the Limestone areas Stewiacke and Musquodobit Valleys.

No. 7—is a well cultivated and productive field at Antigonish on the Carboniferous Limestone.

No. 8—is from the same geological formation at Wentworth, Cumberland County.

No. 9—is a surface virgin soil from Government Farm, Truro.

No. 10—is an upland soil on the Midland Railway about eight miles from Truro.

No. 11—From Atlanta, Kings County; an orchard soil.

12.—A surface, virgin soil from central Lunenburg.

13. No—A soil from Hectanooga, Digby County, farm of Father Broque.

TABLE 2—MARSH SOILS

	1	2	4	q	u	A	G	C	E	F	M	14	H	S	t	13
Insoluble..	84.91	76.77	84.76	82.70	83.66	83.02	77.04	74.92	78.44	78.07	76.24	83.04	75.6	77.23	78.33	75.31
Potash....	.58	.98	.61	.79	.72	.64	.61	1.22	.84	.63	.48	.27	.75	.62	.99	.03
Soda......	.48	.53	.78	.64	.82	1.49	1.43	1.24	1.46	.76	.88	.57	1.14	1.08	.36	.02
Lime......	1.05	.7	1.15	.65	.9	1.05	.83	.67	.4	.6	.6	.6	.3	.3	.65	.4
Magnesia..	1.40	2.04	.97	1.23	1.39	1.13	.65	.85	.58	.86	.78	.13	.4	1.65	1.58	1.17
Sulphuric acid....	.14	.25	.28	.12	.19	.31	.75	.55	.85	.79	.96	.17	.8	.11	.09	.61
Iron oxide.	7.3	12.2	7.5	9.2	7.7	3.54	5.63	5.45	6.35	8 0.	4.5	2.90	5.3	13.1	11.2	4.1
Alumina...						3.74	5.45	6.09	4.35	3.44	6.9	4.54	5.4			5.5
Phosphoric acid....	.13	.18	.05	.18	.1	.18	.27	.34	.21	.21	.19	.21	.25	.16	.16	.19
Volatile or organic	4.22	5.02	3.32	4.29	3.57	3.00	5.00	6.92	4.77	6.01	5.75	4.89	8.12	3.98	5.75	10.43
Moisture..	.27	1.82	.82	1.24	1.1	.71	2.1	.43	1.55	1.5	2.62	1.89	2.12	1.6	1.43	1.86
Nitrogen..	.05	.15	.06	.08	.06	.14	.36	.27	.26	.29	.24	.13	.35	.05	.14	.26

EXPLANATION OF TABLE II.

New Deposits of Marsh Mud.

No. 1—from Mr. Carl Church's property, Falmouth.

No. 2—from Mr. C. H. Black's property, Amherst.

No. 4—from Cornwallis River, near Wolfville.

No. q—from Mr. Taggart's farm, Masstown, Colchester County.

No. u—from Gaspereau River, Mr. Patterson's land.

No. A—from Mr. A. C. Layton's property, Great Village.

No. G—from Folly River, Colchester County.

No. C—from Mr. Urquhart's property, Folly; dyked 3 years before and salt marsh grasses being crowded out by timothy, etc.

No. S—taken at depth of 27-36 inches from A. C. Layton's new marsh, Great Village.

Good Dyked Soil.

No. H—Great Village; cropped for ten years with no treatment: at the time of sampling gave 2½ tons hay per acre.

No. t—from same property, ploughed two years before and gave in 1907, four tons hay per acre.

Run out Marsh.

No. E—Old marsh of Mr. Morrison, Folly, Colchester County.

No. F—Old marsh of Mr. Urquhart, Folly Colchester County, full of weeds.

No. M—Very sour soil: full of weeds: no drainage: Mr. C. T. Smith, Folly.

No. 13—Mr. Patterson's, Horton, Kings County.

No. 14—Mr. C. Logan, Amherst Point: ½ ton hay to the acre.

TABLE 3—SOILS FROM TATAMAGOUCHE AND STEWIACKE.

	22s	16s	6s	11s	17s	7n	13n	2n	12n	9n
Insoluble	85.59	79.56	83.19	80.02	79.33	91.13	85.12	72.15	86.08	65 14
Potash	.28	.32	.36	.42	.4	.19	.21	.39	.29	.55
Soda	.05	.05	.15	.09	.08	.06	.13	.27	.15	.48
Llme	.20	.12	.20	.55	.33	.10	.39	.35	.42	.55
Magnesia	1.21	.71	.73	.63	1.0	.37	.66	1.15	.52	.57
Sulphuric Acid	.09	.12	.11	.11	.07	.16	.10	.13	.10	4.32
Iron oxide	2.54	4.61	3.74	3.25	4.15	1.30	2.25	4.45	2.22	8.32
Alumina	3.92	4.85	2.91	5.68	6.66	2.11	2.27	7.64	2.94	.16
Phosphoric acid	.14	.19	.20	.12	.14	.09	.18	.31	.14	.15
Organic	6.54	8.3	8.19	8.51	8.12	4.08	7.96	11.3	6.54	15.6
Moisture	.44	1.24	1.25	1.28	1.74	.71	1.21	2.16	1.41	3.35
Nitrogen	.13	.21	.22	.18	.17	.07	.23	.3	.15	.83
Humus	1.30	2.55	2.75	2.7	2.56	1.65	2.70	3.30	1.85	.....

EXPLANATION OF TABLE III.

No. 22s—From worn out hillside, Campbell Bros., Stewiacke.

No. 16s—Mr. D. W. Reid, Middle Musquodobit; model orchard giving good returns for 25 years; mostly barn manure.

No. 6s—Property of Dr. Reynolds, Otter Brook, Stewiacke; olf field near river intervale.

No. 11s—"Worn out" hillside at Mr. E. Hamilton's, Springside, Colchester County.

No. 17s—Middle Musquodobit; the Layton farm, giving fair hay crop with no cultivation.

No. 7n—Pasture, newly broken up and given little bone meal. Mr. J. Cunningham, Bayhead, Colchester County.

No. 13n—Turnip field giving good yield; previously in hay for several years; 40 tons barn manure per acre. Mr. A. P. Semple, Brule.

No. 12n—Mr. Jas. Kennedy, Brule; upland not ploughed for 8 years; top dressed once with barn yard manure; yield 2 tons per acre.

No. 2n—McCallum's Settlement; old field.

No. 9n—Run out upland; farm of Wm. Charlton, Stake Road, Cumberland County.

One writer says: "The practice of agriculture has suffered, and is suffering to-day, from an insufficient accumulation of facts and data and from an overproduction of theories and conclusions." From the few analyses made, of very limited areas, we can not consider anything as proven, but can only point out the suggestions from this study.

Of the important plant foods, nitrogen, lime, phosphoric acid and potash, consider first **potash.** The chemist regards this plant constituent as existing in the soil in the easily soluble form, that is, the available part; the more difficult soluble, or the acid soluble, and the insoluble part. For example, a soil analyzed;

POTASH.

Insoluble in acid.	.737 per cent	.886 per cent unavailable
Acid soluble.....	.149 "	
Available.......	.02 "	

that is, there are 45 times as much insoluble potash as available, or according to Dyer's statement given later 90. times as much as the plant needs.

Dyer, in Proc. Royal Society, 1901, says that less than .01 to .03 per cent of available phosphoric acid in a soil indicates the need of phosphate manures and that soils with .01 per cent of available potash probably require no application of potash manures.

Wiley says that the average of analyses of hundreds of samples of sandstones, shales and limestones of the United States is: Potash 1.71 per cent, phosphoric acid .22 per cent and lime, leaving out the lime of the limestones, 4. per cent. Since few analyses of Nova Scotia rocks are available it is assumed that these figures hold here.

Table 4 gives the averages of the important plant foods given in the previous tables, and A the average of 200 American soils.

TABLE 4.

	Acid soluble potash	Phosphoric Acid	Lime	Organic matter	Nitrogen
16 Marsh soils from table 2............	.75	.15	.75	6.7	.18
10 Upland and intervale soils from table 3...	.34	.16	.3	10.	.25
14 Soils from table 1...	.2	.14	.25	10.3	.17
A from table 1........	.29	.24	2.16	7.0	.29

What is the availability of the plant food in Nova Scotia soils? Four samples collected by the writer and analyzed at Ottawa under the direction of Professor Shutt gave as follows:—

TABLE 5.

	Lime		Potash		Phosphoric acid.	
	Acid soluble	Available	Acid soluble	Available	Acid soluble	Available
1—Good soil..	1.64	.99	.27	.048	.23	.087
2—Virgin soil	.04	0	.145	.105	.026	.011
3— ”	.36	.15	.37	.019	.11	.023
4— ”	.11	.02	.42	.018	.064	.023

Hence, from Dyer's statement and the analyses in Tables 1-5 we can say that our soils have a good supply of Potash but available to a limited extent. Comparing Soil No. 1, which has a good supply of lime and organic matter ,with Nos. 2, 3 and 4, low in these components, one may account for the greater proportion of available potash in No. 1.

Phosphoric Acid.

The total phosphoric acid of the soil exists in a much more easily soluble form than the total potash; the acid soluble phosphoric acid is the total and is found in our soils as shown in the summary, Table 4. The phosphoric acid is, as shown in Table 5, about one-fourth available and therefore soon used either by the plant, or washed away as a sediment.

Lime.

Since Nova Scotia has many limestone areas, one might expect the soil to be well provided with lime, but such is not the case. The per cent of lime is seen in Table 4. Again, since nearly all our soils are acid, to a greater or less extent, one concludes that the lime is present in the insoluble and useless silicate form. Nova Scotia being a land of hills and valleys, brooks and rivers, and limestone being taken from the soil by plants and by leaching four times as fast as the potash compounds of the soil are, one can explain the small amount of lime in the soil. From some of the limestone soils of England, 1429 lbs. per acre to depth of nine inches were found to be dissolved out in one year, or in the 40 years of the experiment, about 28 tons per acre.

Very often the soils with the least organic matter show the least lime and vice versa; e. g., a muck soil at Truro shows at the surface:—

	Inorganic.	Volatile matter.	Lime
At Surface..........	7%	85.90%	3.20%
1st ft. of subsoil....	79%	15.73%	1.40%

The organic matter decays, producing acids which hold the lime: this correction of the acidity of the soil is one of the chief uses of lime.

When the solubility of lime, its use as a necessary plant food, as a means of improving the tilth of clay land,

and as an aid in dissolving potash and phosphoric acid, are considered we cannot fail to see that the lime supply in most of our soils is inadequate.

Murray, of England, in "Soils and Manures," says: "Those soils which contain less than one per cent of lime require careful management, especially if they contain much clay or organic matter."

Many experiments are being tried to decide the best form of lime, whether the caustic lime, mild lime, ground limestone or dolomitic limestone: results obtained in Victoria, Australia, at Pennsylvania Experimental Station and Illinois favor ground limestone.

Organic Matter and Nitrogen.

Table 4 gives averages of the organic matter and nitrogen in the three groups of soil studied: these indicate organic matter deficient in nitrogen, just as we have in the peat soils much organic matter with little nitrogen; we must say then, that while the organic matter averages fairly well, the nitrogen content is low, there being too much cropping for the amount of nitrogen returned.

Again, these soils are, as a rule, acid; consequently, the bacteria, which break up the organic matter and form nitrates and which cannot work in the presence of acids, are rendered inactive; this brings into question the availability of the nitrogen and suggests the use of a base like lime.

The great problem in Nova Scotia seems to be to increase and maintain the amount of available nitrogen.

Hopkins "Soil Fertility," page 183, speaking of the common soils of the United States, says: "Phosphorus is the key to permanent agriculture on these lands." This, from our analyses, would seem to apply in this province.

In conclusion, since phosphorus is limited in our soils and since it is necessary for the growth of legumes which take the expensive nitrogen from the air, it must be supplied as a fertilizer; then, the legumes, if properly handled as a crop, will return to the soil the nitrogenous organic matter which, in the presence of lime will decay, bringing about reactions in the soil which result in potash being set free. Therefore Nova Scotia should buy phosphorus and grow **legumes.**

This article is preliminary: it has involved care and time collecting and analyzing soils: the information so far obtained, when added to what should follow from a study of a greater variety of soils, will give us knowledge of practical value. The soil is the basis of all branches of agriculture; "Chemistry is and is to be the mainstay of scientific agriculture;" therefore, it is reasonable that chemists should help in getting a fuller understanding of what the soil is and what may be done with it.

PART II

Professor M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to submit my seventh annual report in connection with the management of Agricultural Societies.

As will be observed there are 219 agricultural societies in the Province, a gradual increase since 1907.

Of the 205 Societies reported a year ago, seven have failed to qualify. There were, however, sixteen new Societies formed during the year and five resuscitated.

It will also be noted that the total membership has increased by 745 and the total subscriptions from $13256.73 to $16,779.03.

I would also call your attention to the fact that while the last year's returns were made on the basis of the former grant of $10,000, at the subsequent session of the Legislature the grant was increased to $15,000. Fourteen Thousand of this went for regular society grants and the balance to assist unfortunate societies and ten dollar bonuses to societies which constructed paddocks for exercising their bulls.

The Agricultural Society Act was also changed to read that the $14,000 should be divided ratably among Agricultural Societies, but that no society should receive more than $1.00 for each dollar subscribed and the maximum amount to be received tby any society be $250.00. Therefore, each society last year received $1.00 for each dollar subscribed with the exception of a few societies which received the maximum amount.

This year, working under the same Act, owing to a very much larger subscription, the grants as worked out in this Report only amount to practically eighty-four cents on each dollar subscribed.

I wish to state that for this year societies, whose grant falls below $40.00, will receive, from the sum to aid unfortunate societies, a sufficient amount to bring their grant up to $40.00. Furthermore, it is my intention to recommend that the Act be changed to read as formerly, viz., that no society receive a less grant than $40.00.

So far as the standing of the societies is concerned, I am pleased to report excellent results. A general forward movement in agriculture is very evident, and as a result of the instructions given at the Agricultural College and the Short Course held there, agricultural societies all over the Province are aiming at higher ideals in live stock, thus greatly increasing their efficiency.

The arrangement of reserving a portion of the grant for assisting unfortunate societies has proved very beneficial. In many instances it has proved the means of tiding good societies over difficulties which would have otherwise proved fatal.

That the system bonusing societies for constructing paddocks is a wise one has been proved beyond a doubt. I have testimonials from a large number of societies expressing surprise at the beneficial results.

Respectfully submitted,

F. L. FULLER.

Previous Record of Agricultural Societies in Nova Scotia.

The fluctuation in the numbers and strength of Agricultural Societies in the Province during the last fifty years is shown in the following table, from which it will be seen that the number of Societies has been increased from the original number of thirty-seven to two hundred and nineteen, membership from 1,744 to 9,428; subscriptions from $1,859.90 to $16,799.03; and grants in aid from $3,010 to $15,000.00.

Comparative Statement showing the number and strength of Agricultural Societies organized under the Act for Encouragement of Agriculture in each year, for fifty years from 1864 *to* 1913 *both inclusive.*

YEAR			No. of Soc.	No. of Memb's	Amount of Subscription	Grants in Aid
1st	Year	1864	37	1744	$1859 90	$3010 00
11th	"	1874	64	3971	4495 00	5830 50
12th	"	1875	66	4140	4757 75	5790 00
13th	"	1876	65	4150	5633 00	6255 50
14th	"	1877	74	4144	4860 00	6592 00
15th	"	1878	77	4138	4860 82	6478 00
16th	"	1879	79	4327	4829 50	6694 00
17th	"	1880	83	4697	5551 75	6548 00
18th	"	1881	86	5229	6186 12	6828 00
19th	"	1882	87	4833	5726 00	6606 00
20th	"	1883	88	4910	5489 00	6548 00
21st	"	1884	92	5064	6361 59	6835 00
22nd	"	1885	88	4592	5225 00	6556 50
23rd	"	1886	91	4532	5334 90	6653 00
24th	"	1887	85	4432	1571 85	6597 00
25th	"	1888	83	3986	4659 47	6361 00
26th	"	1889	82	4398	5170 10	6444 00
27th	"	1890	81	4152	5257 45	6420 00
28th	"	1891	81	4136	5172 29	6432 20
29th	"	1892	80	4273	5856 53	6525 00
30th	"	1893	81	4068	5051 55	6309 50
31st	"	1894	80	4398	4424 55	8000 00
32nd	"	1895	83	4597	5356 15	8000 00
33rd	"	1896	85	4888	5657 30	8000 00
34th	"	1897	89	5238	5997 16	8000 00
35th	"	1898	103	6155	7092 90	8000 00
36th	"	1899	119	6974	8502 45	10000 00
37th	"	1900	131	7362	9322 60	10000 00
38th	"	1901	151	8500	10771 53	10000 00
39th	"	1902	163	8973	11688 43	10000 00
40th	"	1903	172	9444	13209 65	10000 00
41st	"	1904	166	8426	11634 80	10000 00
42nd	"	1905	164	8398	11888 90	10000 00
43rd	"	1906	166	8498	12900 51	10000 00
44th	"	1907	160	7849	15015 40	10000 00
45th	"	1908	167	7596	11284 77	10000 00
46th	"	1909	179	8090	12158 95	10000 00
47th	"	1910	187	8315	12732 45	10000 00
48th	"	1911	200	8567	13137 45	10000 00
49th	"	1912	205	8503	13256 73	10000 00
50th	"	1913	219	9248	16799 03	15000 00

STATEMENT OF SOCIETIES FOR 1913.

There are two hundred and nineteen Agricultural Societies in the Province which have qualified for participation in the grant for 1914. Seven of the two hundred and five societies reported last year have failed to qualify and sixteen new soeitcties have been added and five resusitated.

The following list shows total number of members of the societies of each County, the total amount of subscriptions, duly declared to, according to the Provisions of the Act, as paid by the members within the year, and the total amount of grant qualified for by the several Counties.

COUNTIES	No. of Societies 1913.	Number of Members	Total Amount Subscription	Total Amount Grant in Aid
Annapolis..........	19	764	$ 1517 70	$ 1282 08
Antigonish.........	21	609	1280 65	1081 82
Cape Breton.......	14	435	1035 00	875 16
Colchester.........	20	723	1461 75	1234 81
Cumberland.......	15	595	1044 50	921 16
Digby.............	7	523	840 70	710 18
Guysboro..........	9	370	541 25	457 20
Halifax............	7	271	473 50	399 98
Hants.............	12	489	880 50	743 81
Inverness..........	15	509	993 00	838 83
Kings.............	12	530	1324 60	1118 96
Lunenburg.........	18	1155	1649 98	1393 83
Pictou.............	26	893	1776 40	1500 62
Queens............	4	160	202 00	170 65
Richmond.........	8	184	355 00	299 88
Shelburne..........	2	157	179 00	151 25
Victoria...........	5	105	218 00	184 15
Yarmouth.........	5	676	1104 50	635 63
	219	9248	$16799 03	$14000 00

LIST of Agricultural Societies organized under the Acts for Encouragement of Agriculture with (1) *names of principal officers*; (2) *number of members;* (3) *amount of subscriptions officially declared to in the terms of the Act as paid*

ANNAPOLIS COUNTY.

Annapolis Royal.—President, Rev. Jas. Howe, Annapolis Royal; Vice-President, Robt. Hardwick, Annapolis Royal; Secy-Treasurer, Geo. L. Cain, Annapolis Royal. Directors: John Cameron, A. J. Willis, Fenwick Balcolm, F. A. Chipman, W. A. Marshall, Annapolis Royal. Auditors: Arthur Harris, Robert Jefferson, Anapolis Royal....

Brooklyn.—President, Capt. G. A. Morris; Secy-Treasurer, C. E. Wright, Brooklyn. Directors: Melbourne Whitman, P. F. Young, C. A. Neily, Brooklyn; J. O. Stevenson, L. P. Bruce, Upper Clarence. Auditors: M. P. Neily, J. P. Neily, Brooklyn........................

Clarence.—President, A. P. Phinney, Clarence; Vice-President, Avard Jackson, Clarence; Secy-Treasurer, A. J. Wilson, Clarence. Directors: V. B. Leonard, Albert Banks, J. W. Elliott, C. G. Foster, A. C. Chute, C. H. Jackson, Stewart Leonard, Clarence...........................

Clementsvale.—President, Albert S. Brown, Clementsvale; Vice-President, Jas. H. Robinson, Clementsvale; Secy-Treasurer, Chas. W. Trimper, Clementsvale. Directors: Edward M. Potter, L. C. Sproul, Hallet R. Trimper, Reginald Baird, Leslie Baird, Clementsvale............

Cleveland.—President, Major D. G. Ritcey, Nictaux Falls; Vice-President, A. H. Harris, Nictaux Falls; Secy-Treasurer, Archibald Feindel, Nictaux Falls. Directors: C. C. Smith, A. F. Prentiss, Geo. C. Whitman, C. W. Hoffman, Jas. M. Varner, Nictaux Falls. Auditor, A. H. Harris, Nictaux Falls..................................

Falkland Ridge.—President, Geo. Roop, Falkland Ridge; Secretary, C. R. Marshall, Falkland Ridge; Treasurer, Wm. Sproul, Falkland Ridge. Directors: Dimock Starratt, E. E. Wagner, Percy Starratt, H. Y. Sproul, A. C. Roop, Falkland Ridge...................................

for 1913; *and* (4) *total receipts, total expenditure,* (*c*) *balance in hand,* (*d*) *deficit;* (5) *amount of grant appropriated to each society for* 1913, *subject to compliance in other respects with the requirements of the Act.*

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
26	$47 50	$40 13	$166 47	$87 00	$79 47
32	49 00	41 39	174 66	127 25	47 41
61	122 00	103 06	298 25	218 00	80 25
78	98 00	82 79	247 99	247 23	76
29	53 00	44 79	158 09	198 81	*D* 40 72
36	70 00	59 13	160 36	147 12	13 24

Forest Glade.—President, P. D. Bent, Forest Glade; Vice-President, Fowler Fosrythe, Forest Glade; Secy-Treasurer, D. A. Downie, Margaretville. Directors: Dan Spencer, H. W. Wilkins, A. D. Gates, Forest Glade; Alve Thorne, Prince Albert, Ernest Banks, Prince Albert. Auditors: H. W. Wilkins, Vernon Baker, Forest Glade....

Granville Centre.—President, I. N. Wade, Granville Centre; Vice-President, L. B. Troop, Granville Centre; Secy-Treasurer, Frank Troop, Granville Centre. Directors: Henry Troop, Archie F. Troop, W. S. Fraser, John McCormick, Geo. M. Bent, Granville Centre...........

Laurie.—President, Geo. A. Bolser, Spa Springs; Vice-President, J. S. Marshall, Spa Springs; Secy-Treasurer, A. F. Gordon, Spa Springs. Directors: C. W. Daniels, F. A. Bolser, J. A. Woodbury, A. F. Gordon, W. A. Gates, Spa Springs.................................

Mount Hanley.—President, E. J. Elliott, Mt. Hanley; Vice-President, Stanley Barteaux, Mt. Hanley; Secy-Treasurer, A. W. Slocumb, Mt. Hanley. Directors: J. S. Miller, I. J. Fritze, B. M. Armstrong, Benj. Barteaux, Caleb Slocumb, Mt. Hanley. Auditors: Chas. Barteaux, Stanley Barteaux, Mt. Hanley.........................

Nictaux.—President, F. M. Chipman, Nictaux West; Vice-President, G. D. Morse, Nictaux West; Secy-Treasurer, N. M. Beckwith, Middleton. Directors: F. B. Morse, Willard Ruggles, Nictaux West; H. V. Gates, R. Elliot, N. M. Beckwith, Middleton. Auditors: F. A. Chipman, W. P. Morse, Nictaux West.........................

Paradise.—President, J. S. Longley, Paradise; Vice-President, J. S. Ritcey, Paradise; Secy-Treasurer, R. S. Leonard, Paradise. Directors: F. W. Bishop, L. H. Balcom, J. C. Phinney, H. A. Longley, A. W. Phinney, Paradise.

Riverview.—President, H. C. Marshall, No. Williamston; Vice-President, Heber Boland, Lawrencetown; Secy-Treasurer, John Moore, No. Williamston. Directors: R. J. Messenger, A. C. Stevenson, Lawrencetown; O. M. Charlton, W. W. Whitman, North Williamsotn; Percy Banks, Brickton. Auditors: R. J. Messenger, W. E. Illsley, Lawrencetown.................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
72	150 75	127 35	197 75	191 00	6 75
25	83 00	70 11	242 96	200 80	42 16
39	95 00	80 25	212 31	150 72	61 59
44	57 50	48 57	209 50	229 86	*D* 20 86
35	69 20	58 46	542 94	325 66	217 28
73	160 25	135 37	498 36	272 41	225 75
36	74 25	62 72	307 37	265 42	41 95

Springfield.—President, Jacob Roop, Springfield; Vice-President, A. G. Morton, Springfield; Secretary, G. A. Durling, Springfield; Treasurer, W. M. Durling, Springfield. Directors: Donald Morrison, Albert Grimm, Johnson Crouse, William Roop, I. C. Mason, Springfield. Auditor: C. S. Freeman ....

Stoney Beach.—President, S. E. Thorne, Granville Ferry; Vice-President, H. Winchester, Granville Ferry; Secy-Treasurer, W. B. Winchester, Granville Ferry. Directors: E. D. Farnsworth, H. W. King, S. Blaney, Wm. Hardy, R. Farnsworth, Granville Ferry ....

Torbrook.—President, H. P. Wheelock, Torbrook West; Vice-President, Jas. Jefferson, Torbrook; Secy-Treasurer, A. Stanley Brown, Torbrook. Directors: Samuel McConnell, E. D. Cooney, I. J. Whitman, Emerson Wheelock, Judge Armstrong, Torbrook. Auditors: Arthur Jefferson, Aubrey Whitman, Torbrook ....

Union.—President, R. Van Ditmars, Deep Brook; Vice-President, Garnet Harris, Bear River; Secy-Treasurer, Robt. Spurr, Deep Brook. Directors: Walter Purdy, Edwin Pinkney, Frank Ruggles, Frank McLelland, Joseph Berry, Deep Brook; Roy Kniffin, Bear River. Auditors: Walter Purdy, J. M. Nichols, Deep Brook ....

Williamston.—President, Harry Barteaux, So. Williamston; Vice-President, E. C. Shaffner, So. Williamston; Secy-Treasurer, Bolton M. Shankel, So. Williamston. Directors: A. H. Bishop, W. A. Hunt, B. Randolph, Geo. Whitman, J. L. Shaffner, So. Williamston. Auditors: B. F. Morse, F. A. Randolph, So. Williamston ....

Wilmot.—President, N. P. Wood, Wilmot; Vice-President, Milledge Best, Wilmot; Secy-Treasurer, S. A. Patterson, Wilmot. Directors: Chas. Banks, A. P. Bowlby, C. Dickie, J. L. VanBuskirk, J. P. Kelsall, Wilmot. Auditors: H. R. Pierce, J. L. VanBuskirk, Wilmot ....

ANTIGONISH COUNTY.

Antigonish.—President, Thos. McAnnis, Antigonish; Vice-President, Jas. Thompson; Secy-Treasurer, J. C. McNaughton, Box 135, Antigonish. Directors: Geo. Taylor, W. C. Crockett, Jas. H. Thompson, F. R. Trotter, J. R. Crockett, Antigonish. Auditors, F. H. McPhie, Mr. Harrison, Antigonish ....

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
33	69 00	58 29	164 00	204 05	40 05
19	44 00	37 17	226 92	185 70	41 22
15	40 00	33 79	118 86	93 00	25 86
45	95 00	80 25	355 47	285 05	70 42
40	88 00	74 34	299 84	281 72	18 12
26	52 25	44 14	148 67	57 90	90 77
71	94 00	79 41	267 85	198 00	69 85

Antigonish Harbor.—President, J. P. Grant, Antigonish Harbor; Secy-Treasurer, J. A. McLeod, Harbor Road. Directors: J. W. Chisholm, Antigonish Harbor, Dan J. McDonald, Thos. Hogan, Harbor Road..........

Arisaig.—President, M. D. McDonald, Arisaig; Vice-President, D. M. McDonald, Arisaig; Secy-Treasurer, L. A. Gillis, Arisaig. Directors: J. J. Ross, Jos. A. Smith, D. H. McDonald, R. A. MacDonald, Arisaig. Auditors: A. R. Gillis, A. A. McDonald, Arisaig..................

Beaver Meadow.—President, John R. MacDonald, James River Sta.; Vice-President, Colin McDonald, James' River Sta.; Secy-Treasurer, John J. Chisholm, Briley's Brook. Directors: Allan J. McDonald, Peter McDonald, Wm. McDonald, Wm. Forbes, James' River Sta; H. P. Baxter, Addington Forks. Auditors: Duncan McIsaac, James' River Sta.; A. G. McDonald, Addington Forks....

Clydesdale.—President, Harry Eadie, Clydesdale; Vice-President, John Chisholm, Clydesdale; Secy-Treasurer, Wm. J. Chisholm, Clydesdale. Directors: Herbert Smith, John McDonald, Alex. McDonald, Ronald McDonald, Norman Kirk, Clydesdale. Auditors: H. Smith, John A. McDonald, Clydesdale..............................

Fairmont.—President, W. J. Walsh, Fairmont; Vice-President, Dan Cameron, Fairmont; Secy-Treasurer, Alex. McPherson, Cloverville. Directors: Thos. Brophy, John A. McPherson, Allan Cameron, P. J. Hanrahan, Fairmont; Alex. McPherson, Cloverville. Auditors: Dan Cameron, P. D. Hanrahan, Fairmont......................

Fraser's Grant.—President, Simon Perro, Fraser's Grant; Vice-President, Alex. S. McDonald; Secy-Treasurer, Alex. Fraser, Fraser's Grant. Directors: Wm. Tate, Ronald S. McDonald, Rod. J. McDonald, Clarence Rodgers, Fraser's Grant. Auditors: Wm. J. Rodgers, John A. McIntyre, Fraser's Grant.........................

Glassburn.—President, John J. Chisholm, Glassburn; Vice-President, Colin McDonald, Glassburn; Secy-Treasurer, Duncan Chisholm, Glassburn. Directors: John B. McDonald, Alex. J. Chisholm, Daniel Chisholm, Rod. D. Chisholm, John W. Chisholm, Glassburn. Auditors: Angus Chisholm, Colin A. Grant, Glassburn..................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
21	48 00	40 55	197 91	196 61	1 31
20	40 00	33 79	122 00	42 70	79 30
41	69 50	58 71	279 54	78 24	201 30
20	43 00	36 32	215 27	182 70	32 57
25	40 00	33 79	148 00	80 82	67 18
22	65 00	54 91	145 04	123 58	21 46
27	105 00	88 70	394 73	200 54	194 19

Harbour au Bouche.—President, J. E. Corbett, Harbor au Bouche; Vice-President, W. W. Webb, Harbor au Bouche; Secy-Treasurer, A. N. Webb, Harbor au Bouche. Directors: Chas. Boucher, J. T. Crispo, Moses Brow, Edward D. Fougere, John McKeough, Harbor au Bouche. Auditors: J. T. Crispo, W. W. Webb, Harbor au Bouche..

Lakevale.—President, Duncan C. McNeil, Lakevale; Secy-Treasurer, Donald Beaton, P. P., Lakevale. Directors: Dougald McDonald, John H. Boyd, Dan Wallace, Angus McNeil, John A. Boyd, Lakevale. Auditors: John A. McDougall, Dan McGillivray, Lakevale............

Lochaber.—President, Archibald Cameron, West Lochaber; Vice-President, John Brown, West Lochaber; Secy-Treasurer, John Brown, West Lochaber. Directors: Jas. D. Stewart, Middleton; Alex. E. Cameron, Ashdale; Isaac Archibald, Hugh McInnis, So. Lochaber; Dan McDonald, So. Lochaber. Auditors: Geo. Inglis, No. Lochaber; Isaac Archibald, Lochaber...............................

McAra's Brook.—President, Donald McDonald, McAra's Brook; Vice-President, John D. McPherson, McAra's Brook; Secy-Treasurer, Alex. B. Smith, Knoydart. Directors: C. J. McDonald, Angus McDonald, D. McDonald, John W. McAdam, John A. McDonald, McAra's Brook. Auditors: C. J. McDonald, John A. McDonald, McAra's Brook...

Morar.—President, Angus Brown, Morar; Vice-President, Richard Honrahan, Morar; Secy-Treasurer, John A. Gillis, Morar. Directors: John McMillan, Allan Adams, Jas. McDougall, Livingstone's Cove; Angus McPherson, Morar. Auditors; Michael McNeil, Morar; Angus McDougall, Livingstone's Cove........................

North Grant.—President, Geo. Sutton, Antigonish; Vice-President, Matthew Rogers, Antigonish; Secy-Treasurer, Wm. Vinten, Slyvan Valley. Directors; Allan A. McDonald, Angus McLean, Briley's Brook; Frank Chisholm, North Grant. Matthew Rogers, Antigonish.......

Pleasant Valley.—President, Alex. McDonald, Pleasant Valley; Vice-President, Chas. McGillivray, Pleasant Valley Secy-Treasurer, R. McDonald, Pleasant Valley. Directors: Edmund Purcell, Geo. Baxter, Allan A. McDonald, Angus McGillivray, Ronald Smith, Pleasant Valley. Auditors: Chas. McGillivray, Alex McGillivray, Pleasant Valley.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
38	40 00	33 79	164 07	216 19	52 12
24	72 50	61 24	268 24	238 01	30 23
44	44 00	37 17	139 69	177 83	38 14
16	40 50	34 21	130 25	79 25	51 00
33	44 50	37 59	190 22	144 40	45 82
31	60 75	51 32	164 19	103 94	60 25
24	44 50	37 59	175 79	198 25	22 46

St. Andrews.—President, Roderick McIntosh, St. Andrews; Vice-President, Don. R. Chisholm, Pomquet River; Secy-Treasurer, A. J. Chisholm, P. P., St. Andrews. Directors: Angus McIsaac, Dunmore; John C. Chisholm, Allan McDonald, Dan McDonald, St. Andrews. Auditors: Dan Boyd, John C. Chisholm, St. Andrews..................

South River.—President, L. Gillis, Upper South River; Vice-President, A. J. McDonnell, Fraser's Mills; Secy-Treasurer, Dan. D. McGillivray, McPhersons'. Directors: John McPherson, John D. Cameron, Daniel McPherson, McPherson's; Dan J. McDonald, Fraser's Mills; John V. McPherson, Upper South River. Auditors; Malcolm Sinclair, Dan R. McDonnell, Fraser's Mills................

South River and Loch Katrine.—President, Rev. A. A. McLeod, Loch Katrine; Vice-President, Jas. F. McNaughton, Loch Katrine; Secy-Treasurer, A. D. McPherson, Upper South River. Directors: A. D. McIntosh, John A. Cameron, Loch Katrine; A. H. McPherson, A. A. McDonald, John A. McMillan, Upper South River. Auditors: J. H. Kennedy, A. C. Cameron, Loch Katrine...........

South Side Cape George.—President, Jas. F. McEachern, Cape George; Vice-President, Duncan Gillis, Cape George; Secy-Treasurer, John M. McEachern, Cape George. Directors: Malcolm McEachern, John J. McGillivray, Wm. McPhie, Colin McDonald, John Adams, Cape George.

South Side Harbor.—President, Rod Chisholm, S. S. Harbor; Vice-President, John Chisholm, S. S. Harbor; Secy-Treasurer, Alex. Cameron, Lower South River. Directors, John Kiley, Ronald Cameron, Hugh McDonald, Lower South River; Dan Fraser, Angus Dunn, South Side Harbor. Auditors: Colin Chisholm, J. A. McLellan, South Side Harbor.......................................

West River.—President, Dan J. McDonald, Purl Brook; Vice-President, Thos. Ethridge, Purl Brook; Secy-Treasurer, Dan C. McGillivray, Glen Road. Directors: D. H. Williams, West River; Frank McNaughton, Salt Springs; Alex. Kirk, Alex. Kennedy, Purl Brook; John C. Fraser, Ashdale. Auditors: Cameron Chisholm, Frank McNaughton, Salt Springs..............................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
21	133 40	112 69	New	Society	
31	89 25	75 39	288 52	183 10	105 42
19	57 00	48 15	186 00	157 76	28 24
27	42 75	36 11	81 00	79 10	1 90
22	40 00	33 79	80 00	80 00	
32	67 00	56 60	156 25	411 83	255 58

CAPE BRETON COUNTY.

Christmas Island. President, Rev. A. R. McDonald, P. P., Christmas Island; Vice-President, D. J. McDougall, Christmas Island; Secy.-Treasurer, Ronald McKenzie, Christmas Island. Directors: Jas. McDougall, M. H. Gillis, John N. McKenzie, Jas. A. McNeil, Christmas Island; M. J. McNeil, Grand Narrows. Auditors: Jas. McDougall, Michael J. McNeil, Christmas Island.......

Edwardsville.—President, J. W. Taylor, Edwardsville; Vice-President, L. R. Lewis, Edwardsville; Secy-Treasurer, Jas. Keating, Edwardsville. Directors: Thos. Rudderham, J. B. Lewis, Thos. Roberts, Edwardsville; Stanley Lewis, Wallace Lewis, Pt. Edward.........................

East Bay.—President, Stephen D. Gillis, East Bay; Vice-President, Angus J. Morrison, East Bay; Secy-Treasurer, D. Jos. McIsaac, East Bay. Directors: Rev. J. W. McIsaac, P. P., Dan Campbell, Dan R. McIsaac, J. H. McDonald, Peter Gillis, East Bay. Auditors: Jos. A. McNeil, Rod Campbell, East Bay...............

Grand Mira.—President, John J. Gillis, Grand Mira South; Vice-President, Angus R. Campbell, French Road; Secretary, Neil D. Gillis, Grand Mira South; Treasurer, Archie L. Gillis, Grand Mira South. Directors: Alex. A. Gillis, Simon Gillis, Anthony McEachern, Jos. McKinnon, John A. Gillis, Grand Mira South. Auditors: John J. Gillis, Neil D. Gillis, Grand Mira South................

George's River.—President, E. J. Johnston, George's River; Vice-President, Alex. W. Gillis, George's River Station; Secy-Treasurer, A. B. McPhee, George's River Station. Directors: Luke Day, Barney Ryan, John McMullen, George's River; Geo. H. Young, Wilson Gillis, George's River Station. Auditors: Daniel Young, Wilson Gillis, George's River Station.......................

Homeville and Mira Bay.—President, Ronald McKeigan, Catalone Gut; Vice-President, Harry Dillon, Round Island; Secy-Treasurer, Chas. Spencer, Mira Gut. Direc-Tors: Everett Spencer, Herbert Spencer, Wesley Nicoll, Roy Martel, Mira Gut; Chas. Dillon, Round Island. Auditors: Harry Dillon, Round Island; Roy Martel, Mira Gut.......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
30	73 00	61 66	157 12	152 00	5 12
20	60 50	51 10	167 49	167 24	25
21	82 00	69 27	New	Society	
21	58 00	49 00	New	Society	
34	51 50	43 50	309 43	309 05	38
15	60 00	50 69	116 34	102 30	14 04

Little Bras d'Or.—President, Parker M. Rice, George's River; Vice-President, Chas. Johnston, North Sydney; Secretary, W. W. Johnston, Box 227, North Sydney; Treasurer, J. Geo. Hull, North Sydney. Directors: Robt. Moffatt, North Sydney, Robt. D. Wilson, Geo. Howaston, John G. Musgrave, John McKinnon, Little Bras d'Or. Auditors: Jos. O'Handley Little Bras d'Or; C. W. Moffatt, North Sydney..............................

Leitche's Creek.—President, R. T. McDonald, Leitche's Creek; Vice-President, John Beaton, Leitche's Creek; Secretary, Kenneth Gordon, Leitche's Creek; Treasurer, J. R. Elliot, Leitche's Creek. Directors: A. McCormick, Daniel McDonald, Wm. Elliot, Norman Johnson, Leitche's Creek....................................

Marion Bridge.—President, Alex. F. McNeil, Marion Bridge; Vice-President, Alex. Munro, Marion Bridge; Secy-Treasurer, Neil Ferguson, Marion Bridge. Directors: Donald S. McKeigan, Donald McLeod, Rory Morrison, John A. McLean, Wm. Morrison, Marion Bridge.........

North Sydney.—President, John M. McQueen, Leitche's Creek; Vice-President, H. A. Moore, Jacksonville; Secretary, M. J. Ingraham, North Sydney; Treasurer, A. K. Jackson, Jacksonville. Directors: C. A. Munn, Leitche's Creek; Wm. Musgrave, Palmer Moffatt, North Sydney; Webster Allen, H. A. Moffatt, Jacksonville. Auditors: R. M. Jackson, Jacksonville; F. E. Jackson, North Sydney.

Salem Road.—President, N. J. McDonald, Enon; Vice-President, John A. McDonald, Lake Uist; Secy-Treasurer, A. J. McCuish, Lake Uist. Directors: John W. McDonald, Salem Road; Donald A. McDonald, Tera Nova; Alex. M. McDonald, Angus McCuish, Enon; D. A. McKinnon, Big Glen...............................

South Bar.—President, A. J. McLeod, South Bar; Vice-President, A. R. Richardson, South Bar; Secy-Treasurer, F. A. McInnis, Whitney Pier. Directors: Abner McLennan, Michael Murphy, John McIntyre, Jack Barrington, Jr., Wm. Murphy, South Bar. Auditors: Howard Richardson, Wm. Murphy, South Bar.................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
40	55 00	46 46	135 38	93 80	41 78
32	43 75	36 96	134 60	115 50	19 10
20	54 00	45 62	178 23	114 29	63 94
48	73 25	61 88	104 63	206 51	1 88
81	267 00	225 55	493 00	493 00	
37	74 00	62 51	336 57	291 24	45 32

Sydney Forks.—President, Rod. McRae, Sydney Forks; Vice-President, Michael Gillis, Meadows Road; Secy-Treasurer, Gus B. McDonald, Sydney Forks. Directors: Jas. McPhee, Meadows Road; M. Smith, Neil McNeil, Sydney Forks; Dan J. Gillis, Portage East Bay; John P. McPhee, Glen Morrison. Auditors: Colin McRae, Sydney Forks; Dan A. McAdam, Meadows Road..............

Sydney River.—President, Jacob Andrews, Coxheath; Vice-President, David Andrews, Coxheath; Secy-Treasurer, D. R. Nicholson, Coxheath. Directors: Daniel Ferguson, James Boutelier, Fred Andrews, John T. Andrews, R. B. Murray Coxheath..............................

COLCHESTER COUNTY.

Agricola.—President, H. M. Smith, Upper Stewiacke; Vice-President, Frederick Tupper, Upper Stewiacke; Secy-H. C. Dunlap, Middle Stewiacke; Treasurer, Thos. Francis, Upper Stewiacke. Directors: C. C. Hill, Hedley Creelman, J. D. Dunlap, C. B. Bentley, C. C. Cox, Middle Stewiacke; Auditors: H. D. Campbell, J. S. Cunlap, Middle Stewiacke.

Annan.—President, Angus Murray, Tatamagouche; Vice-President, Alex. Conkey, Tatamagouche; Secy-Treasurer, H. B. Cock, Tatamagouche Mt. Directors: Woodbury Hamilton, East New Annan; Jordan Thompson, John Baillie, Alex. Conkey, Arthur Tucker, Tatamagouche Mt. Auditors: Malcolm Thompson, Jordan Thompson....

Balmoral.—President, Robt. D. MacKay, Balmoral Mills; Vice-President, Geo. Ferguson, Balmoral Mills; Secy-Treasurer, John Munro, Balmoral Mills. Directors: Geo. S. Baillie, Hugh MacKay, John W. Murray, Peter A. McDonald, Robt. D. MacKay, Balmoral Mills. Auditors: Geo. S. Baillie, Hugh W. MacKay, Balmoral Mills.......

Bayhead.—President, W. C. Johnson, Bayhead; Vice-President, Geo. Gumphy, Bayhead; Secretary, J. L. Cunningham, Bayhead; Treasurer, A. S. McDonald. Bayhead. Directors: Sidney Clark, Angus Roberts, Hugh McDonald, Sam Mattatall, Harvey Holmes, Bayhead. Auditors: Sidney Clark, Angus Roberts, Bayhead..................

Bass River.—President, J. H. Fulton, Bass River; Vice-President, S. H. Fulton, Bass River; Secy-Treasurer, S. G. Dickey, Bass River. Directors: D. H. Lank, Amos Fulton, Berton Densmore, Chas. E. Fulton, S. H. Fulton, Bass River. Auditors, Amos Fulton, E. E. Thompson, Bass River....................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
21	42 00	35 48	New	Society	
15	42 00	35 48	187 35	126 15	61 20
52	91 75	77 51	220 50	245 76	25 26
29	48 25	40 76	112 50	154 55	42 05
25	40 50	34 21	129 87	67 25	62 62
22	45 50	38 43	145 29	98 30	36 99
33	60 50	51 10	123 98	103 50	20 48

Brookfield.—President, J. T. Bell, Brookfield; Vice-President, Chas. Whidden, Brookfield; Secy-Treasurer, Aaron Hamilton, Brookfield. Directors: Elwood McLellan, T. D. Bates, Fred Lochart, Melville Carter, Albert Boomer Brookfield..

Brule Shore.—President, R. D. Malcolm, Brule; Vice-President, John Fraser, Waldegrave; Secy-Treasurer, James Reid, Brule Shore. Directors: Geo. W. Fraser, Alex. McKinnon, Noah Jollimore, Waldegrave; A. P. Semple, Brule; Geo. Dunn, Brule Shore Auditors: Noah Jollimore, George Dunn....................................

Dairy.—President, Alex. Conkey, Tatamagouche Mountain; Vice-President, Shepherd Langille, Cen. New Annan; Secy-Treasurer, C. J. Cock, Cen. New Annan. Directors: H. H. McNutt, Tatamagouche Mt.; Wm. Langille, East New Annan; A. M. Swan, J. A. Wilson, J. T. McKenzie, Cen. New Annan. Auditors: J. D. Wilson, J. A. Wilson, Cen. New Annan...............................

Earltown.—President, Geo. McIntosh, Earltown; Vice-President, Jack Gunn Earltown; Secy-Treasurer, John A. Murray, Earltown. Directors: Geo. Taylor, Wm. McDonald, Geo. McKenzie, Jack Gunn, Robt. E. MacKay, Earltown..

Farmers.—President, Murdock Currie, Londonderry Sta.; Vice-President, Robt. McKay, Londonderry Sta.; Secy-Treasurer, Harvie Gray, East Mines Sta. Directors: George Dill, A. E. McLean, Thos. Smith, Londonderry Sta.; W. E. McLean, East Mines Sta.; E. C. Fletcher, Glenholme. Auditors: W. E. McLean, A. E. McLean....

Londonderry.—President, Melville McNutt, Masstown; Vice-Presdient, J. R. Flemming, DeBert Village; Secretary, T. W. Morrison, Glenholme; Treasurer, Harvie Gray, East Mines Sta. Directors: A. W. Pentelow, Chas. Vance, John Walker, Masstown; J. R. Flemming, DeBert; Gordon Wyllie, Glenholme. Auditors: J. R. Flemming, Arthur Putman, DeBert Village..........................

Middleton.—President, David McLeod, Denmark; Vice-President, John W. Langille, Middleton; Secy-Treasurer, Oliver Stevenson, Denmark. Directors: R. C. Wilson, Arthur Bryden, Jas. R. Hogan, A. D. Langille, Denmark; E. G. Stevenson, Fobres' P. O. Aduitors: R. C. Wilson, J. A. Stevenson, Denmark.........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
32	58 50	49 42	138 99	120 10	18 89
25	40 00	33 79	164 24	129 38	34 86
31	54 75	46 45	146 71	145 00	1 71
21	50 50	42 65	86 00	96 25	10 25
88	234 50	198 10	406 00	463 18	57 18
33	177 50	149 94	305 00	299 04	5 96
48	80 50	68 00	43 50	79 50	36 00

North River.—President, R. H. Nelson, North River; Vice-President, C. E. Blair, North River; Secy-Treasurer, Wm. Murray, North River. Directors: Wm. Blair, Stanley Murray, C. E. Blair, Geo. Payne, Wm. Murray, North River. Auditors: A. W. Higgins, Alex. Murray, North River..

North Earltown.—President, Wellington Ross, Earltown; Vice-President, Donald P. Sutherland, North Earltown; Secy-Treasurer, Alex. W. Murray, Earltown. Directors: D. G. Ross, John Matheson, John M. Munro, North Earltown; D. R. McKenzie, W. R. Murray, Earltown. Auditors: D. R. McKenie, John M. Munro............

Portapique.—President, J. N. Brown, Portapique; Vice-President, Samuel Creelman, Portapique; Secy-Treasurer, H. A. Baird, Portapique. Directors: J. D. Hill, W. P. Hennessy, Allen Carr, J. N. Brown, Edgar McMillan, Portapique..............................

Springside.—President, John R. Cox, Newton Mills; Vice-President, Rev. W. P. Archibald, Springside; Secy-Treasurer, F. T. Gammell, Newton Mills. Directors: Lyman Fulton, Samuel Johnson, Newton Mills; Jas. Creelman, Eddie Hamilton, Springside; Jos. Archibald, Cross Roads.................................

Stirling.—President, A. S. Carroll, Annandale; Vice-President, J. D. Murdock, New Annan; Secy-Treasurer, Isaac Gray, Annandale. Directors: John Grace, Charlie Vincent, James McDonald, Wm. Gray, Jas. Carroll, New Annan. Auditors: A. S. Carroll, Geo. Marshall, Annandale.

Stewiacke.—President, J. W. Meadows, Stewiacke; Vice-President, Chas. E. Gould, Stewiacke; Secy-Treasurer, H. F. Ambrose, Stewiacke. Directors: E. G. Campbell, Porter Banks, Fred Fulton, W. G. Erwin, J. J. Gourley, Stewiacke. Auditors, Luther Dickie, S. H. Taylor, Stewiacke..

Tatamagouche.—President, G. B. Clark, Tatamagouche; Vice-President, W. B. McLellan, Tatamagouche; Secy-Treasurer, J. J. Clark, Tatamagouche. Directors: W. D. Langille, J. W. Langille, Daniel Donaldson, French River; Thos. Bonyman, E. H. Langille, Tatamagouche. Auditors: Gordon Clark, Jas. Bryden, Tatamagouche............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
29	49 50	41 82	135 64	75 00	60 46
19	40 00	33 79	122 86	85 04	38 81
43	60 00	50 69	146 92	106 75	40 17
44	50 00	42 24	151 75	71 40	80 35
41	43 50	36 75	96 50	93 83	2 67
45	126 00	106 44	655 71	148 31	507 40
35	68 00	57 44	256 42	248 04	8 38

Waugh's River.—President, A. W. McLeod, Waugh's River; Vice-President, Kenneth Sutherland, Waugh's River; Secy-Treasurer, J. M. McKay, Waugh's River. Directors: Harry Hayman, Alex. Matheson, W. M. McKay, J. H. Sutherland, Geo. W. MacKay, Waugh's River. Auditors: Jas. W. McKay, Alex. Hayman, Waugh's River.........

CUMBERLAND COUNTY.

Amherst.—President, C. Edgar Shipley, Amherst; Vice-President, R. R. Black, Amherst; Secy-Treasurer, C. H. Black, 208 Victoria St., Amherst. Directors: Ernest W. Embree, East Amherst; Jos. Bird, West Leicester; W. W. Embree, West Amherst; Cecil V. Thompson, Fort Lawrence; B. C. Gourley, Amherst. Auditors, Samuel Trueman, Norman Black, Amherst.......................

Beckwith.—President, R. S. Flinn, Beckwith ; Vice-President, C. H. Angus, Carrington; Secy-Treasurer, R. D. Walker, Beckwith. Directors: C. H. Angus, H. Porter, Carrington; Wm. Fraser, Chas. Ripley, Rossindale; J. Eaton, Beckwith..................................

East Wallace Union.—President, John J. Ross, Wallace Ridge; Vice-President, W. H. Mullins, East Wallace; Secy-Treasurer, J. H. Lantz, East Wallace. Directors: D. G. McKenzie, Malagash; J. H. Miller, Harry Dewar, Geo. A. Ross, East Wallace; D. Chambers, Wallace Ridge. Auditors: W. C. Smith, Chas. Carlyle. East Wallace.....

Fox Harbor.—President, D. M. Bacon, Fox Harbor; Vice-President, Lewis Green, Fox Harbor; Secretary, Jas. Robertson, Fox Harbor; Treasurer, Stanley Robertson, Fox Harbor. Directors: Daniel Stromberg, Duncan McLanders, Murray Robertson, Wm. Oxley, Fox Harbor....

Lorneville.—President, Manford Oxley, Tidnish; Vice-President, Jas. Brown, Lorneville; Secretary, Walter Oulton, Lorneville; Treasurer, C. H. Jackson, Lorneville. Directors: Earl Jackson, Thos. Ogden, Tidnish; Allison Baxter, W. H. Jackson, Walter Embree, Lorneville. Auditors: Geo. Oulton, J. H. Jackson, Lorneville................

Malagash.—President, Jas. Beattie, Blue Sea Corner; Vice-President, Jas. B. Lombard, Blue Sea Corner; Secy-Treasurer, J. T. Treen, Malagash Centre. Directors: Geo. W. Byers, Robt. McNeil, Malagash Centre; W. H. Treen, Jacob Treen, Blue Sea Corner; Peter Murray, North Shore. Auditors: R. W. Porteus, James Beattie, Malagash Centre..

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
28	42 00	35 48	100 59	96 70	3 89
162	331 25	250 00	729 59	481 88	241 79
21	42 00	35 48	107 55	74 59	32 96
25	50 00	42 24	98 96	87 60	11 36
39	56 50	47 73	145 42	216 90	71 48
40	50 00	42 24	139 25	79 89	59 36
36	68 50	57 87	112 80	55 00	57 80

Maple Leaf.—President, Alex. McPherson, Victoria; Vice-President, Lawrence Stewart, South Victoria; Secretary, H. G. Thompson, Victoria; Treasurer, A. R. McArthur, Victoria. Directors: Robt. D. Stewart, South Victoria; Archie Main, Gilbert Weeks, Birch Wood; Clarence McPherson, Victoria; Oliver N. King, Hansford. Auditors: K. J. A. Cook, John Hudson, Birch Wood......

Middleboro.—President, C. A. Fountain, Middleboro; Vice-President, Asa Stevens, Middleboro; Secy-Treasurer, G. G. McKim, Middleboro. Directors: E. Howard, D. Howard, Geo. Angevine, Middleboro; Herbert Crawford, Percy McKim, Hartford. Auditors: Geo. Angevine, Percy McKim....................................

Minto.—President, David Bacon, Nappan Sta.; Vice-President, J. L. Roach, Nappan Sta.; Secy-Treasurer, J. Wellington Lowther, Nappan Sta. Directors: Jas. Stewart, F. L. Roach, Herbert Blenkhorn, J. McCully Pipes, J. E. Harrison, Nappan Sta. Auditors: David Bacon, Frank Roach, Nappan Sta...................

Parrsboro.—President, G. H. Jeffers, Lakeland; Vice-President, D. W. Holmes, Cross Roads; Secy-Treasurer, Robie Kirkpatrick, Kirk's Hill. Directors: H. R. Berry, New Prospect; D. O'Regan, J. E. Brown, Lakelands; E. W. Fowler, Cross Roads; A. F. Sencebaugh, Parrsboro. Auditors: E. Jeffers, A. H. Hatfield, Parrsboro.........

Pugwash.—President, Beecher V. Robertson, Pugwash; Vice-President, A. R. D. Mitchell, Pugwash; Secy-Treasurer, D. J. Mitchell, West Pugwash. Directors: J. W. Henderson, J. H. Matheson, D. Fullerton, Harry Tuttle, C. C. Colburne, Pugwash. Auditors: Hugh Clark, Ernest D. Mitchell, Pugwash..............................

Shinimecas.—President, E. E. Fisher, Shinimecas Bridge, Vice-President, G. O. Smith, Shinimecas Bridge; Secy-Treasurer, J. C. Brander, Shinimecas Bridge. Directors: G. O. Smith, J. Archie Moore, A. Purdy Blair, L. S. Fisher, Roy Fisher, Shinimecas Bridge. Auditors: John C. Black, Jos. P. Smith, Sihnimecas Bridge...................

Upper Wentworth.—President, Samuel Little, Went-Worth Station; Vice-President, W. W. Purdy, Wentworth Station; Secy-Treasurer, R. C. Swallow, Wentworth Centre. Directors: John D. Swan, H. B. Swallow, Chas. Little, Arthur Munro, P. W. Tuttle, Wentworth. Auditors: W. A. Weatherbee, Fred Smith, Wentworth...........

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
20	66 00	55 75	160 50	124 75	35 75
49	59 75	50 47	178 88	120 06	58 82
25	109 75	92 71	80 00	105 29	25 29
18	43 50	36 75	176 11	153 35	22 76
27	44 75	47 80	85 25	93 18	8 56
25	40 00	33 79	226 46	103 86	122 60
49	71 25	60 20	150 53	151 13	1 40

Victoria.—President, Moore S. Thompson, South Victoria; Vice-President, Everett Webb, Victoria; Secy-Treasurer, John W. Crowley, Street's Ridge. Directors: Duncan Ross, Egerton Betts, Victoria; Wm. Van Buskirk, Frank Roblee, Street's Ridge; Stanley Stewart, South Victoria. .

Wallace Grant.—President, A. G. McIntosh, Wallace Grant; Vice-President, Wm. McFarlane, Wallace Grant; Secy-Treasurer, A. W. Stevens, Wallace Grant. Directors: Chas. McEachern, L. Gordon Stevens, Wallace Grant; Allan Reeves, South Wallace; Wm. McEachern, Wallace Highlands; Garfield Coulter, Wallace Grant. Auditors: C. L. Archibald, Dayton Reeves, Wallace Grant........

DIGBY COUNTY.

Belliveau Cove.—President, Lennie Belliveau, Belliveau's Cove; Vice-President, Felix Gaudet, Belliveau'x Cove; Secy-Treasurer, Antime Doucet, Belliveau's Cove. Directors: Alca Belliveau, Damien Doucet, Emilier LeBlanc, Joseph C. Theriault, Augustin Theriault, Belliveau's Cove.

Digby Central.—President, John O. Turnbull, Lighthouse Road; Vice-President, D. C. McKay, Acaciaville; Secy-Treasurer, F. W. Nichols, Digby. Directors: Jas. Trevoy, Brighton; Jonathon Letteney, Digby; W. W. DeLong, Acaciaville; H. C. McNeil, North Range; Jacob Trask, Marshalltown. Auditors: D. C. McKay, Johnathon Letteney..................................

Gilbert's Cove.—President, Fred L. Manzer, Ashmore; Vice-President, Fred Sabean, Gilbert's Cove; Secy-Treasurer, C. T. Kinney, Gilbert's Cove. Directors: Leander Kinney, Wm. H. Brooks, Ahsmore; Andrew Morrisey, Maunde Thibideau, Gilbert's Cove. Auditors : Archie Brooks, Weymouth North; Albert Melanson, Gilbert's Cove..

Hillsburg.—President, J. Byron Harris, Bear River; Vice-President, W. E. Reade, Bear River; Secretary, C. F. McDormand, Bear River; Treasurer, H. R. Kinney, Bear River. Directors: Ezra Miller, Harvey Chisholm, Harry Harris, Fred Reade, Chas. R. Harris, Bear River. Auditors: Chas. McDormand, W. E. Reade, Bear River...........

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
25	43 00	36 32	151 82	133 00	18 82
34	49 50	41 81	179 63	72 00	107 63
43	73 00	62 51	337 57	229 02	108 55
152	229 20	193 61	610 84	445 61	165 23
69	69 00	58 29	New	Society	
80	192 00	162 20	386 20	282 74	103 64

Little Brook.—President, Fred Comeau, Little Brook; Vice-President, Eddie Gaudet, Comeauville; Secy-Treasurer, Arnaud S. Comeau, Little Brook. Directors: Isaac H. LeBlanc, Albaine LeBlanc, Little Brook; Augustin A. Comeau, Sigefried Comeau, Comeauville. Auditors: Francois Theriault, Symphorium LeBlanc, Little Brook.......

St. Mary's.—President, Benj. Robbins, Sandy Cove; Vice-President, James Cossaboom, Sandy Cove; Secy-Treasurer, Edward McKay, Sandy Cove. Directors: Wm. Cossaboom, Kenneth Dakin, Owen Waggoner, Amasa Eldridge, H. Morehouse, Sandy Cove.................

Smith's Cove.—President, A. H. Weir, Smith's Cove; Vice-President, J. W. Rice, Smith's Cove; Secy-Treasurer, Spurgeon Weir, Joggins Bridge. Directors: J. L. Sulis, J. S. Potter, John Thomas, Frank Sulis, Joggins Bridge; Edward Winchester, Smith's Cove. Auditors: Wm. Snow, J. L. Sulis, Joggins Bridge.........................

GUYSBORO COUNTY.

Erinville.—President, Patrick Walsh, Erinville; Vice-President, Wm. O'Neil, Salmon River Lake; Secy-Treasurer, Jos. Lawlor, Erinville. Directors: Wm. Kelly, Michael Doyle, Wm. McKinnon, Michael Flynn, Erinville; Robt. Burns, Salmon River Lake.........................

Goshen.—President, Andrew Sinclair, South River Lake; Vice-President, J. A. Sinclair, Goshen; Secy-Treasurer, Alex. Sinclair, Goshen. Directors: Leonard Sinclair, W. H. Sinclair, John F. Wall, Goshen; Alfred Forbes, W. McIntosh, South River Lake. Auditors: A. F. McNaughton, Dougald McPherson, Goshen........................

Glenelg.—President, David Whidden, Glenelg; Vice-President, A. D. Archibald, Glenelg; Secy-Treasurer, A. H. McKeen, Glenelg. Directors: Arthur Fisher, Geo. W. Mitchell, Aspen; Daniel Tate, Melrose; Geo. B. McIntosh, Smithfield; Herbert McLauchlin, Glenelg. Auditors: Geo. L. Cameron, H. E. Stewart, Melrose..............

Guysboro.—President, J. A. Fulton, Guysboro: Vice-President, Wm. Whitman, Guysboro; Secy-Treasurer, Chas. E. Jost, Guysboro. Directors: Wm. Johnson, Roachvale; Daniel Kennedy, Tompkinsville; John H. Skinner, John E. Dillon, W. E. Scott, Guysboro. Auditors: L. E. Hart, W. E. Scott, Guysboro.........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
58	96 00	81 10	172 01	163 00	9 01
95	138 00	116 57	568 53	426 69	141 84
26	42 50	35 90	82 50	81 46	1 04
36	71 00	59 98	142 00	142 00	
33	45 00	38 00	142 30	90 15	52 15
41	46 50	39 28	273 15	201 51	71 64
96	136 50	115 31	483 22	472 37	10 85

Intervale.—President, W. G. Aikens, Intervale; Vice-President, James Wall, Intervale; Secy-Treasurer, Heber Keay, Intervale. Directors: Wm. A. Aikens, Wm. F. Aikens, Intervale; Daniel McDougall, Heber S. Ferguson, Wm. McKenzie, North Intervale....................

Lakedale and Giant's Lake.—President, John J. McNeil, Giant's Lake; Vice-President, John C. McIsaac, Giant's Lake; Secy-Teasurer, Ronald McIsaac, Giant's Lake. Directors: Rod McLean, Hugh Sullivan, Thos. Kennedy, Lakedale; C. P. Miller, Archie McNeil, Giant's Lake. Auditors: Angus McIsaac, Giant's Lake; Hugh McLean, Lakedale..................................

Manchester.—President, John A. McMaster, Boylston; Vice-President, D. R. O'Brien, Manchester; Secy-Treasurer, Stanley Lipsett, Manchester. Directors: John Lipsett, John H. Byers, Vincent Martin, Edmund Torey, D. F. Conoly, Mancnester. Auditors: John H. Myers, D. F. Conoly, Manchester...........................

New Town.—President, A. T. McBain, New Town; Vice-President, Wesley McKay, Willowdale; Secy-Treasurer, John T. McBain, New Town. Directors: Martin Gunn, East River, St. Marys; W. H. Archibald, John G. Cameron, David N. Cameron, New Town; A. H. Sutherland, Rocky Mountain...........................

Stillwater.—President, H. A. McLane, Stillwater; Vice-President, M. A. Whidden, Stillwater; Secretary, W. A. McDonald, Stillwater; Treasurer, A. McDonald, Stillwater. Directors: Gordon McIntosh, W. B. Fraser, Rod Weir, John McKeen, A. McDonald, Stillwater..........

HALIFAX COUNTY.

Dartmouth.—President, Maynard Tulloch, Cole Harbor; Vice-President, Wallace Piveril, Cole Harbor; Secy-Treasurer, Grant E. Eisener, Dartmouth. Directors: M. H. Baker, A. Innis, C. J. Keeler, Dartmouth; R. Morash, Woodlawn, M. Tulloch, Cole Harbor...............

Elderbank.—President, Cameron McMullin, Elderbank; Vice-President, Robt. Ogilvie, Elderbank; Secy-Treasurer, H. E. Cole, Elderbank. Directors: Geo. McLellan, Henry Grant, Harris Dares, D. R. McDonald, Morton McMullin, Elderbank. Auditors, Clarence Cole, Allen Ogilvie, Elderbank......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
36	43 00	36 32	97 00	111 32	14 32
21	41 00	34 63	102 00	57 15	44 85
65	76 25	64 42	165 28	145 45	19 83
20	41 00	34 63	92 04	65 50	26 54
22	41 00	34 63	139 90	60 00	79 90
41	74 00	34 63	337 57	229 02	108 55
32	61 50	51 95	New	Society	

Eastern Star.—President, Jas. A. Thomas, Preston; Vice-President, S. Ross, Preston; Secretary, Jos. Thomas, Preston; Treasurer, Henry Saunders, Preston. Directors: Samuel Tyler, Sam'l Williams, Edward Crowley, Richard Brooks, Sam'l Carter, Preston. Auditors: John Saunders, George Downey, Preston..

Halifax.—President, John McAloney, Halifax; Vice-President, R. H. Edwards, Halifax; Secretary, H. H. Blois, 255 Quinpool Road, Halifax; Treasurer, R. Duggan, Halifax. Directors: Wm. McKerron, C. W. Anderson, Thos. Goudge, J. W. Logan, E. H. Blois, Halifax. Auditors: F. Edwards, Edward Goudge, Halifax............

Musquodoboit Harbor.—President, Wesley Ritcey, Musquodoboit Harbor; Vice-President, Geo. Landels, Musquodoboit Harbor; Secretary, Spencer Sutherland, Musquodoboit Harbor; Treasurer, Leander Smith, Musquodoboit Harbor. Directors: Jas. Ritcey, Alex. Slade, Robt. Stoddart, John Rowlings, Oswald Mosher, Msuquodoboit Harbor..

Middle Musquodoboit.—President, Wm. H. Gladwin,.. Middle Musquodoboit; Vice-President, John W. Fox, Middle Musquodoboit; Secy-Treasurer, Chas. Logan, Middle Musquodoboit. Directors: Harrison Gladwin, Sydney McKeen, Jas. A. Sedgwick, Wm. H. Guild, Middle Musqyodoboit; R. H. Reid, Brookvale. Auditors: Samuel Hanna, Robt. Kaulback, Middle Musquodoboit.........

Seaside.—President, W. D. Conrad, Lawrencetown; Vice-President, Isaac Sellars, Lawrencetown; Secy-Treasurer, Freeman Sellers, Lawrencetown. Directors: Jasper McDonald, Jas. Misnor, Morris Conrad, Daniel Murphy, Allison Lappiere, Lawrencetown. Auditors: Sidney Sellars, Melvern Leslie, Lawrencetown...................

HANTS COUNTY.

Avon.—President, David Withrow, Newport Landing; Vice-President, Lemuel Parker, Newport Landing; Secy-Treasurer, E. B. Mosher, Newport Landing. Directors: W. B. Mosher, John Shaw, E. B. Mosher, Wm. Withrow, Newport Landing...................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
22	44 00	37 17	153 77	67 47	86 30
51	58 00	49 00	575 07	237 22	337 85
47	51 00	43 08	New	Society	
58	138 00	116 57	993 89	448 44	545 45
20	80 00	67 58	82 50	80 00	2 50
26	52 00	43 93	282 81	204 45	77 36

Burlington.—President, R. P. Harvie, Burlington; Vice-President, C. E. Nichols, Burlington; Secy-Treasurer, Robie C. Sandford, Burlington. Directors: Clarence Harvie, Jas. Sanford, Fred Blackburn, Welsford Salter, Daniel Young, Burlington. Auditors: Alonzo Harvie, George Armstrong, Burlington..............................

Fenwick.—President, Seymour Main, East Noel; Vice-President, Richard Cameron, Minasville; Secretary, Isaac H. Densmore, Burncoat; Treasurer, Milton O'Brien, Noel. Directors: Morton Faulkner, Burncoat; Sidney O'Brien, Harold O'Brien, Noel; Morris Densmore, East Noel; Morris Densmore, East Noel, Hugh Main, Noel Shore...

Hantsport.—President, Lee H. Schurman, Mt. Denson; Vice-President, C. N. Sweet, Hantsport; Secy-Treasurer Roy A. Davis, Mount Denson. Directors: H. L. Shaw, H. P. Lynch, Mount Denson; Wilbert Dorman, Er. L. Gertridge, Chas. E. Tracey, Hantsport.................

Kempt.—President, J. R. Mosher, R. R. No. 1, Newport; Vice-President, LeRoy P. Sanford, Summerville; Secy-Treasurer, E. E. Skaling, Newport, R. R. No. 1. Directors: Rufus Rose, H. E. McDonald, Palmer Burgess, Kempt Shore; Geo. H. Greeno, W. E. Wilcox, Newport, R. R. No. 1. Auditors: Bertram Card, Kempt Shore; Otis Vaughn, Summerville..............................

Maitland.—President, Thos. G. Smith, Maitland; Vice-President, John G. Whidden, Maitland; Secy-Treasurer, W. F. Roy, Maitland. Directors: John Carr, Lawson Hayes, Herbert Eaton, Capt. Geo. Douglas, Duncan McDougall, Maitland. Auditors: Wm. McKenzie, Denison Smith ,Maitland..............................

Meander.—President, Howard Smiley, Newport; Vice-President, J. Murdock Harvey, Newport; Secy-Treasurer, Morris Dill, Newport. Directors: Harry Aston, Herbert Hawksworth, A. L. Harvey, Leonard Harvey, Amos Veinott, Newport..............................

Progress.—President, Harry Roulston, Elmsdale; Vice-President, Geo. Fraser, Elmsdale; Secy-Treasurer, Hugh Fraser, Elmsdale. Directors: Jas Tullos, Jos. Flemming, L. Casey, E. S. McMillan, Marshall Welwood, Elmsdale. Auditors: Geo. Wright, Ed. McMillan, Elmsdale.........

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
21	95 50	72 23	145 00	140 42	4 98
44	78 00	65 89	169 50	159 63	9 87
43	81 50	68 85	209 06	185 25	23 81
31	50 00	42 23	New	Society	
24	47 00	39 70	253 83	169 52	84 31
19	57 25	48 36	108 00	133 95	25 95
40	48 75	41 20	178 68	110 00	68 68

Scotch Village.—President, B. Anthony, Scotch Village; Vice-President, H. W. Dimock, Scotch Village; Secy-Treasurer, L. M. Smith, Scotch Village. Directors: J. H. Walker, Job Sanderson, O. G. Walley, Daniel Anthony, H. A. Wile, Scotch Village..........................

Selmah.—President, W. P. Sterling, Lower Selmah; Vice-President, R. Cox, Sterling Brook; Secy-Treasurer, Harold Fiske, Selmah. Directors: Geo. McDuffie, Selmah; Osmond Sterling, Harry Densmore, Sterling Brook; A. M. Anthony, Lower Selmah. Auditors: John McLearn, Clarence Putnam, Selmah.........................

Shubenacadie. President, Jas. McKenzie, Shubenacadie; Vice-President, W. D. Bowers, Shubenacadie; Secretary, A. H. Snide, Shubenacadie; Treasurer, E. M. Dewis, Shubenacadie. Directors, Allison McDonald, Brenton Miller, Jas. A. Kirkpatrick, Harry A. Stewart, Wm. Dodd, Shubenacadie. Auditors: J. A. Kirkpatrick, Watson Smith, Shubenacadie..........................

Windsor.—President, Wm. O'Brien, Windsor Forks; Vice-President, Geo. Wilson, Windsor: Secretary, Geo. W. DeWolf, Three Mile Plains; Treasurer, Geo. B. O'Brien, Windsor Forks. Directors: Geo. Haley, W. L. Saunders, John Baker, Fred Morton, Fred McHeffey, Windsor Forks. Auditors: J. W. Blanchard, W. L. Saunders, Windsor Forks......................................

INVERNESS COUNTY.

Black River.—President, A. D. Beaton, Glenora Falls; Vice-President, Jas. Beaton, Alexander; Secy-Treasurer, A. J. Campbell, Alexander. Directors: M. F. Campbell, Neil McKinnon, Glenora; John A. Campbell, Glenora....

Cheticamp.—President, Baptiste LeFort, Point Cross; Vice-President, Denis AuCoin, Point Cross; Secy-Treasurer, Patrick Cormier, Point Cross. Directors: John Cormier, Emelien LeFort, Paul Devear, Chas. AuCoin, Thomas AuCoin, Point Cross. Auditors: Ephrain Chiasson, John AuCoin, Point Cross..........................

Dunvegan.—President, Dan N. McLennan, Dunvegan; Vice-President, R. McLellan, Dunvegan; Secy-Treasurer; D. J. McLeod, Dunvegan. Directors: John C. McLeod, Rod McLennan, Alex. D. McPherson, Dunvegan; Auditors: Angus D. McDonnell, Rod McRae, Dunvegan......

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
18	65 00	54 91	506 04	492 50	13 48
31	61 00	51 53	216 36	172 75	43 61
117	117 00	98 83	998 37	448 07	550 30
75	137 50	116 15	291 00	201 40	89 60
15	40 00	33 79	114 44	30	114 14
43	88 00	74 34	249 80	231 40	18 40
15	150 00	126 71	144 68	144 68	

Emerald.—President, Jos. R. Murphy, Emerald, Margaree; Vice-President, Michael Coady, Emerald; Secy-Treasurer, Jas. Tompkins, Emerald. Directors: Hugh McLellan, Dan McLellan, Allan McDonnell, Mt. Pleasant; John I. Murphy, Jas. Coady, Emerald...............

East Margaree.—President, A. A. Taylor, Margaree Harbor; Vice-President, J. R. LeBlanc, East Margaree; Secy-Treasurer, R. McDonald, East Margaree. Directors: Lauchlin McNeil, Scotch Hill; D. J. McKinnon, Margaree Harbor; Ph. J. LeBlanc, Dan P. LeBlanc, East Margaree..

Glenville.—President, Allan McKinnon, Strathlorne; Vice-President, Alex. M. McDonald, Strathlorne; Secy-Treasurer, J. J. McLellan, Glenville. Directors: D. D. McLellan, Neil D. McInnis, Alex. McEachern, Glenville; D. A. Campbell, John H. McKinnon, Strathlorne........

Judique.—President, John D. Graham, Judique; Vice-President, John D. McIssac, Judique North; Secy-Treasurer, Alex. D. Beaton, Rear Little Judique. Directors: John A. McDonald, Angus S. Graham, A. A. Beaton, Judique; Allan J. McInnis, Upper South West; Theo. McDougall, Judique North. Auditors: John D. McLellan, Judique North; Angus H. McIssaac, Rear Little Judique.........

Marble Mountain.—President, Dan J. Morrison, Marble Mountain; Vice-President, Lauchlin McLean, Malagawatch; Secy-Treasurer, John D. McAskill, Marble Mountain Directors: John McKillop, A. A. McLean, Neil R. McKenzie, Marble Mountain; Lauchlin McKinnon, John W. McFadgen, Malagawatch...........................

Margaree Forks.—President, John J. Cody, Margaree Forks; Vice-President, Felix Chaisson, Margaree Forks; Secretary, Duncan McDonald, Margaree Forks; Treasurer, Thomas Tompkins, Margaree Forks. Directors: Peter McDonnell, John A. Chiasson, Archy W. Chisholm, Peter J. Coady, Chas. Miller, Margaree Forks. Auditors: John P. Coady, Martin Cameron, Margaree Forks...........

Melford.—President, D. J. McPhail, Melford; Vice-President, J. A. McPhail, Melford; Secy-Treasurer, D. O'C. Doyle, Melford. Directors: John D. McLeod, River Dennis Centre; Jas. A. McLennan, A. J. McPhail, Melford; Alf. McPherson, A. R. McPhail, Upper River Dennis.......

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
16	60 00	50 69	New	Society	
55	75 00	63 36	166 00	163 07	2 93
28	60 50	51 10	134 39	87 45	46 93
40	40 00	33 79	136 64	66 65	69 99
43	55 00	46 46	168 00	177 82	9 82
39	95 00	80 25	139 66	140 44	78
32	42 00	35 48	194 95	23 85	171 40

North East Margaree.—President, John A. Burton, North East Margaree; Vice-President, John Crowdis, North East Margaree; Secretary, Albert Ingraham, North East Margaree; Treasurer, Ralph McPherson, North East Maragree. Directors: Jas. Murphy, David Fraser, Geo. Coady, David Greig, Alfred Hart, North East Margaree. Auditors: Simon Fraser, John M. Rowe, East North Margaree..

Port Hood.—President, Murdock McPherson, Rear Port Hood; Vice-President, John A. Gillis, Little Mabou; Secy-Treasurer, John R. McDonald, Port Hood. Directors: John A. McDonald, Rear Port Hood; Dan A. Gillis, Little Mabou; John Fraser, Donald Cameron, Dunmore; John A. Smith, Port Hood...........................

Rossville.—President, M. H. McLeod, North East Margaree; Vice-President, Jas. J. Miller, North East Margaree; Secy-Treasurer, J. Mariner Smith, North East Margaree. Directors: Jos. J. Ross, N. McDaniel, Patrick Munro, Caleb Ross, Edward Ross, North East Margaree. Auditors: J. J. McDaniel, D. R. Ethridge, North East Margaree..

St. Joseph.—President, Adolph J. Desveaux, Grand Etang; Vice-President, E. P. Chiasson, Grand Etang; Secretary, John B. J. Chiasson, Friar's Head Chapel; Treasurer, Marcellin Au Coin, Friar's Head Chapel. Directors: D. J. AuCoin, G. P. Doucet, J. E. Chiasson, Peter Poirier, Grand Etang, Pepier Au Coin, Jr., Friar's Head Chapel...................................

Southwest Margaree.—President, D. D. McFarlane, Southwest Margaree; Vice-President, Allan A. McDonald, Southwest Margaree; Secretary, A. S. McDougall, Southwest Margaree; Treasurer, Simon A. Gillis, Southwest Margaree. Directors: D. J. Gillis, D. E. Collins, Rev. F. J. Chisholm, P. P., Alex. H. Gillis, John F. Gillis, South-Margaree. Auditors: Jas. A. McFarlane, Angus A. McDonald, Southwest Margaree......................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
45	65 00	54 91	165 62	199 75	34 13
39	40 00	33 79	131 93	91 86	40 07
17	44 00	37 16	158 76	30 00	128 76
86	86 00	72 65	141 40	95 10	46 30
35	52 50	44 35	113 00	104 00	9 00

KINGS COUNTY.

Aylesford.—President, F. E. Meister, Auburn; Vice-President, H. E. Bowlby, Aylesford; Secy-Treasurer, J. J. Patterson, Aylesford. Directors: W. H. Forsythe, Fred Crichton, L. K. Patterson, Aylesford. Auditors: D. F. Bowlby, Milton Taylor, Aylesford....................

Dalhousie East.—President, C. P. Wilson, Dalhousie East; Vice-President, G. A. Taylor, Dalhousie East; Secretary, John Long, Dalhousie East; Treasurer, W. O. Wright, Dalhousie East. Directors: Wm. Oickle, Wallis Conn, Stewart Veinott, Robt. Wilson, G. A. Taylor, Dalhousie East. Auditors: E. H. Saunders, Wm. Oickle, Dalhousie East..............................

Gaspereaux.—President, A. B. Coldwell, Gaspereaux; Vice-President, Geo. Coldwell, Gaspereaux; Secy-Treasurer, P. J. Gertridge, Gaspereaux. Directors: N. E. Coldwell, Wallbrook; F. L. Gertridge, K. E. Hunter, Clifford Coldwell, Delmer Coldwell, Gaspereaux.......................

Highland.—President, Geo. Brown, North Mountain; Vice-President, Jas. Bennett, North Mountain; Secy-Treasurer, H. Rae Bennett, East Hall's Harbor. Directors: Borden Steele, DeLance Huntley, Alfred Brown, Mark Simpson, Chas. Watson, East Hall's Harbor.......

Kings County.—President, L. P. Dennison, Hortonville; Vice-President, J. Oscar Harris, Wolfville; Secretary, F. H. Crane, Grand Pre. Directors: R. W. Woodman, Grand Pre; G. P. Fuller, Ross Fullerton, North Grand Pre; Geo. Huntley, Avonport. Auditors: John Lawrence, Frank Fuller, Grand Pre..............................

Kingston.—President, E. L. Foster, North Kingston; Vice-President, H. J. Neiley, North Kingston; Secy-Treasurer, G. S. Smith, Kingston. Directors: Theo. Hill, F. W. Foster, J. C. Welton, B. W. Cleveland, J. H. Neiley, North Kingston..............................

Morristown.—President, W. A. Easson, Factory Dale; Vice-President, Geo. Hutchinson, Factory Dale; Secy-Treasurer, Geo. A. Roland, Aylesford. Directors: Otis Nichols, Geo. Fancy, Jas. Felch, A. H. Ewing, Geo. West, Morristown. Auditors: A. H. Ewing, Hennigar Ewing, Morristown..................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
63	114 75	96 94	480 79	308 60	172 19
17	45 50	38 43	192 02	241 16	49 14
67	124 50	105 17	294 59	132 00	162 59
43	107 00	90 40	375 00	342 00	33 00
84	229 00	193 45	479 02	293 00	186 02
16	86 00	72 65	290 10	235 94	54 16
33	98 10	82 87	323 92	245 45	78 47

Scott's Bay.—President, L. A. Huntley, Scott's Bay; Vice-President, M. W. Steele, Scott's Bay; Secy-Treasurer, J. L. Corkum, Scott's Bay. Directors: Joshua Huntley, Jasper Steele, Wm. Tupper, Melbourne Corkum, Wyman Shaw, Soctt's bay. Auditors: Oxley Steele, L. A. Huntley, Scott's Bay. . . . .

South Berwick.—President, R. H. Banks, Waterville; Vice-President, Manning Chute, Berwick; Secy-Treasurer, H. P. Banks, Waterville. Directors: A. Palmer, W. A. Osborne, Waterville; Levi Owens, S. B. Chute, H. S. Shaw, Berwick. Auditors: R. M. Shaw, W. A. Osborne, Waterville. . . . .

Tremont.—President, E. G. Jefferson, Tremont; Vice-President, M. E. Baker, Tremont; Secy-Treasurer, G. O. Woodbury, Tremont. Directors: R. E. Saunders, C. F. Welton, Tremont; G. Ward, South Tremont; L. P. Welton, Kingston; Eric Neiley, Torbrook Mines. Auditors: A. J. Saunders, W. E. Saunders, Tremont. . . . .

Union.—President, C. C. H. Eaton, Canard; Vice-President, W. A. Newcomb, Canard; Secy-Treasurer, Walter E. Eaton, Upper Canard. Directors: Leander Eaton, H. Morris, J. E. McGowan, L. Woodworth, Jr., T. J. Borden, Canard. Auditors: Jos. Kinsman, Fred Thomas, Canard. . . . .

West Cornwallis.—President, N. J. Bryden, Berwick; Vice-President, I. W. Baker, Berwick; Secy-Treasurer, F. A. Illsley, Berwick. Directors: A. Jordan, J. B. White, A. M. Bishop, R. G. Power, R. S. Spicer, Berwick. Auditors: A. L. Reid, L. F. Best, Berwick. . . . .

LUNENBURG COUNTY.

Bridgewater.—President, A. Wm. Hebb, Bridgewater; Vice-President, Geo. B. Hebb, Bridgewater; Secy-Treasurer, Dr. R. J. McMeekin, Bridgewater. Directors: Peter Wylde, Chas. Walker, Claude Cook, Scott Hebb, Tilton Hebb, Bridgewater. Auditors: Wm. W. Duff, Geo. Hubley, Bridgewater. . . . .

Central.—President, Chas. Silver, Rhodes' Corner; Vice-President, Henry Burns, Upper La Have; Secy-Treasurer, W. L. Mulock, Rhodes' Corner. Directors: Jas. Fraser, Israel Beck, Upper La Have; Hibbert Hirtle, Chas. Wentzel, Cephas Dunmore, Rhodes' Conrer. . . . .

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
44	85 00	71 80	343 68	356 53	12 85
58	101 25	85 83	233 94	128 10	105 84
27	71 00	59 97	169 45	149 65	19 80
33	88 00	74 34	194 18	216 06	21 88
45	174 50	147 41	326 59	231 90	94 59
136	268 25	226 60	716 18	565 20	150 98
55	55 00	46 46	New	Society	

Centreville.—President, F. W. Grant, Barss' Corner; Vice-President, Adam Webber, Searsdale; Secy-Treasurer, J. L. DeLong, Barss' Corner. Directors, W. W. Crandall, M. B. DeLong, Lowell DeLong, Chas. Silver, Barss' Corner; C. R. DeLong, Farmington. Auditors: M. B. DeLong, W. W. Crandall, Barss' Corner...............

Chester.—President, John A. Webber, Chester; Vice-President, Abner Webber, Chester; Secretary, E. D. Lordley, Chester; Treasurer, Jas. E. Whitford, Chester. Directors: Harry Walker, Burton Hennigar, Freeman Pulsifer, G. H. Longard, Justus Morash, Chester. Auditors: G. H. Longard, Wilbert Corkum, Chester....................

Farmers.—President, T. U. Rhodenizer, Parkdale; Vice-President, Nathan Wentzell, Maplewood; Secy-Treasurer, H. A. Rafuse, Parkdale. Directors: Jos. Frank, Guy Rafuse, Parkdale; G. C. Wentzell, S. B. Wentzell, H. N. Wentzell, Maplewood.............................

Lakeside.—President, J. C. Hallamore, New Cornwall; Vice-President, Alden Barkhouse, New Cornwall; Secretary, A. W. Dauhpinee, New Cornwall; Treasurer, Augustus Ernst, New Cornwall. Directors: Amos Dory, Elem Veinotte, Esrom Spidle, Sidney Joudrey, Chas. Dimell, New Cornwall. Auditors: Arthur Joudrey, Archie Eisnor, New Cornwall..............................

La Have River.—President, Albert Rhodenizer, West Northfield; Vice-President, A. F. Smith, Lower Branch; Secy-Treasurer, Wallace Rhodenizer, Bridgewater. Directors: W. K. Cook, Bridgewater, G. A. Crouse, U. S. Keizer, Lower Branch; Geo. Hirtle, Mark Rhodenizer, West Northfield......................................

Lewiston.—President, Henry I. Meister, Mill Road; Vice-President, Bennett Walker, New Ross; Secy-Treasurer, W. E. Hirtle, Mill Road. Directors: Wallace Russell John Broom, New Ross; Jas. Auker, Harlan Rafuse, Mill Road. Auditor: Chas. Russell, New Ross..............

Mahone Bay.—President, H. S. Lane, Mahone; Vice-President, C. A. Hamilton, Mahone; Secretary, C. U. Mader, Mahone; Treasurer, J. H. Mader. Mahone. Directors: Azariah Kaulback, Oakland; Geo. A. Mader, Mader's Cove; Timothy Lantz, Melrose; Simon Zwicker, Mahone; John Kedy, Melrose..............................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
36	64 50	54 50	128 93	119 30	9 63
60	79 25	66 95	179 15	175 00	4 25
39	79 00	66 73	202 44	144 59	57 85
50	117 00	98 84	227 50	201 06	26 44
26	40 00	33 79	New	Society	
35	46 50	39 28	212 13	140 25	71 88
155	159 50	134 73	715 42	274 93	440 49

Maitland.—President, Chas. Barry, Barry's Corner; Vice-President, Robt. Eichel, Barry's Corner; Secy-Treasurer, N. W. Eichel, Barry's Corner. Directors: Esrom Joudrey, Alfred Demone, Artemas Joudrey, Wallace Sloughenwhite, Barry's Corner. Auditors: Joseph Kaulback, Anthony Barry, Maitland Forks......................

Malagash.—President, Adam Knickle, Heckman's Island Vice-President, R. A. Backman, Lunenburg; Secy-Treasurer, W. J. Anderson, Lunenburg. Directors: Henry Myra, Garden Lots; Robt. Schwartz, Kenneth Crouse, Lunenburg; L. S. Rhodenizer, 1st Peninsula; J. H. Rhodenizer, Lily Dale................................

Midville Branch.—President, Jas. Snyder, Midville; Vice-President, Edwin Silver, Lower Branch; Secretary, Fletcher Hirtle, Midville; Treasurer, Albert Snyder, Midville. Dierctors: Stephen Smith, Jos. Snyder, Howard Wentzel, Midville; Chas. Rhodenhizer, Auburndale; Stewart Crouse, Lower Branch. Auditors: Otto Mailman, David Wagner, Midville..............................

New Ross.—President, H. A. Mesiter, New Ross; Vice-President, D. M. Turner, New Ross; Secy-Treasurer, W. E. Larder, New Ross. Directors: Uriar Keddy, Henry Windrow, Edward Russell, Alonzo McDow, O. S. Elliot, New Ross, Auditors: A. M. Ross, Norwood Gates, New Ross.......................................

Oak Hill.—President, H. A. Silver, Oak Hill; Vice-President, W. W. Ernst, Oak Hill; Secy-Treasurer, Owen G. Dauphinee, Bridgewater. Directors: Chas. Wile, Timothy Wynot, Albert Westhaver, Howard Spidell, Amos Langille, Oak Hill .Auditors: Titus Ramey, Stanley Rawding, Oak Hill................................

Riverside.—President, J. F. Penny, New Germany; Vice-President, Wm. Eisnor, New Germany; Secy-Treasurer, D. W. Morton, New Germany. Directors: Chas. Varner, Ansley Amburg, Raswell Feindel, Obe Varner, Stanley Jefferson, New Germany. Auditors: H. P. Chesley, J. N. Veinott, New Germany....................

Union.—President, Jos. Simpson, Simpson Corner; Vice-President, Casper Hirtle, Hemford; Secy-Treasurer, Herbert Silver, Hemford. Directors: Wm. Veinot, John Simpson, Arch Snyder, Arthur Lohnes, Andrew Russel, Hemford. Auditors: Aulden Mailman, John Simpson.............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance
59	70 00	59 13	165 24	122 05	43 19
173	244 00	206 12	777 55	654 43	123 13
40	47 50	40 13	178 41	95 77	82 54
60	63 00	53 22	145 08	107 90	37 18
60	77 50	65 47	190 25	176 57	13 68
66	86 98	73 48	147 94	113 93	34 01
33	42 00	35 48	210 89	186 10	24 79

Upper Northfield.—President, Lemuel Penny, Upper Northfield; Vice-President, Asaph McKay, Upper Northfield, Secretary, Harry McKay, Upper Northfield; Treasurer, Jos. McKay, Upper Northfield. Directors: Jas. McKean, Jos. MacKay, Arch Penny, Upper Northfield. Auditors: Geo. Fancey, Asaph McKay, Upper Northfield.

West Northfield.—President, Harvey Meisner, West Northfield; Vice-President, Ludim Feener, West Northfield. Secy-Treasurer, John Langille, West Northfield. Directors: Milledge Wentzel, Hugh Rhodenhizer, S. M. Ramee, Paul Wentzel, Ludim Feener, West Northfield. Auditors: Wm. Sarty, Albert Feener, West Northfield....

PICTOU COUNTY.

Big Island.—President, John McLean, Big Island; Vice-President, Owen Cameron, Big Island; Secy-Treasurer, A. J. Chisholm, Big Island. Directors: Daniel McLean, Jos. McDonald, Geo. McGregor, Lauchie Maclean, Owen Cameron, Big Island. Auditors: Daniel Maclean, Wm. McGregor, Big Island............................

East River.—President, Jos. H. Grant, Springville; Vice-President, A. McN. Grant, Springville; Secy-Treasurer, Sinclair Cameron, Bridgeville. Dirctors: John Delaney, Simon Fraser, A. C. McDonald, Springville; S. C. Fraser, Geo. Tait, Bridgeville.............................

Egerton.—President, Chas. Matheson, Fox Brook; Vice-President, Johnson Cameron, Riverton; Secretary, H. D. McLeod, Hopewell; Treasurer, Sam McKay, Riverton. Directors: Chas. Matheson, Johnson Cameron, Finlay Gray, Hopewell; Mowat McKay, Riverton. Auditors: Chas. Matheson, Mowatt McKay, Finlay Gray........

Little Harbor.—President, Alex. Reid, Little Harbor; Vice-President, D. A. McQueen, King's Head; Secy-Treasurer, Alex McQueen, King's Head. Directors: J. W. Reid, Reidway; J. C. Reid, J. R. Reid, Little Harbor; R. W. McQueen, King's Head; D. H. Cameron, Chance Harbor. Auditors: D. P. McDonald, J. D. Grant, King's Head...

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
43	60 00	50 68	119 87	96 90	22 97
29	50 00	42 24	176 04	175 00	1 04
15	42 00	35 48	112 87	89 20	23 67
31	49 00	41 39	215 74	171 25	44 49
27	98 00	82 79	205 29	84 00	121 29
27	62 00	52 37	136 30	116 48	19 32

Lyon's Brook.—President, I. E. Grant, Lyon's Brook; Vice-President, C. D. Gammon, Lyon's Brook; Secy-Treasurer, G. Wm. Grant, Lyon's Brook. Directors: A. D. McKay, R. Fullerton, Pictou; Peter McInnis, Alex. Morrison, Lyon's Brook; Finlay McIntosh, Pictou. Auditors: A. D. McKay, Pictou; Peter McIntosh, Lyon's Brook.

Marshville.—President, H. M. Tattrie, River John; Vice-President, Robt. Murray, Marshville; Secy-Treasurer, Calvin Langille, Marshville. Directors: A. B. Langille, Cyrus Langille, Jas. I. Langille, Rod McDonald, Clarence Langille, Marshville................................

Meadowville.—President, J. W. Murray, Meadowville; Secy-Treasurer, J. W. McBain, Meadowville. Directors: Wilson McConnell, Jas. B. McDonald, J. W. Reid, Jas. Cotter, Meadowville. Auditors: Robt. McConnell, G. E. Fraser, Meadowville................................

Merigomish.—President, Renwick Forbes, Merigomish; Vice-President, Forrest Finlayson, Merigomish; Secy-Treasurer, David Finlayson, Merigomish. Directors: Thos. Olding, Samuel Cameron, John W. Dunn, Geo. W. Roy, Angus Grant, Merigomish..........................

Mill Brook.—President, D. A. McKenzie, New Gairloch; Vice-President, Wm. McDonald, Mill Brook; Secretary, A. J. McIntosh, Mill Brook; Treasurer, Samuel Gordon, Mill Brook. Directors: Wm. H. Fraser, Wm. S. Fraser, John W. McDonald, John L. Munro, David Ferguson, Mill Brook................................

Mount Thom.—President, David Cameron, Lower Mt. Thom; Vice-President, D. R. Fraser, Lower Mount Thom; Secy-Treasurer, W. C. Proudfoot, Salt Springs. Directors: Chas. Fraser, Chas. Maxwell, Wm. McKay, Daniel Creighton, W. D. McDonald, Lower Mount Thom. Auditors: D. D. Cameron, W. D. Maxwell, Lower Mount Thom....

New Glasgow.—President, J. C. Warren Fraser, New Glasgow; Vice-President, J. B. MacDougall, New Glasgow; Secy-Treasurer, P. Macfarlane, New Glasgow. Directors: John R. McMillan, Edgar E. Morrow, Jas. R. Fraser, Wilbur McLean, Falconer McDonald, New Glasgow. Auditors: S. H. MacKenzie, Don F. Fraser, New Glasgow.....

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
30	60 85	51 40	164 22	124 65	38 57
20	63 50	53 64	113 50	58 65	54 85
25	47 50	40 13	185 22	156 65	28 57
40	40 00	33 79	106 33	98 53	7 80
40	63 00	53 22	268 33	179 00	89 33
19	46 55	39 32	146 79	77 30	69 49
64	140 25	118 48	475 98	354 20	121 78

New Lairg.—President, W. A. McLean, Landsdowne; Vice-President, K. A. McLeod, Landsdowne; Secy-Treasurer, Jas. Douglas, Concord. Directors: Daniel Graham, George Murray, K. A. McLeod, Landsdowne Sta.; John D. Balfour, Alex. F. Murray, Concord. Auditors: Robt. G. McLeod, Landsdowne; Jas. D. McCoul, Concord.....

Pictou.—President, Edward Harris, Pictou; Vice-President, R. D. Ross, Pictou; Secy-Treasurer, D. Logan, Pictou. Directors: Hugh Sutherland, Mercer Murray, A. McG. Fraser, John McKeil, Gordon McKenzie, Pictou. Auditors: Peter Fraser, E. L. Armstrong, Pictou.........

Pine Tree.—President, Wm. Reid, Sutherland's River; Vice-President, E. W. Heurtley, Sutherland's River; Secy-Treasurer, W. Wm. Roy, Linacy. Directors: Robt. Rae, Thos. Beveridge, Pine Tree; J. C. Simmonds, E. T. King, Duncan Robertson, Sutherland's River.................

Pictou Island.—President, Chas. McCallum, Pictou Island; Vice-President, Lauchie Rankin, Pictou Island; Secretary, Hector McDonald, Pictou Island; Treasurer, John Rankin, Pictou Island. Directors: Robt. McFarlane, Wm. McLean, Ward McCallum, Angus H. McDonald, George Rankin, Pictou Island.........................

River John.—President, J. R. Collie, River John; Vice-President, H. H. Sellers, Hodson; Secretary-Treasurer, Wm. McGregor, River John. Directors: H. M. Tattrie, C. A. Hamilton, W. J. McLean, John R. Sutherland, Jas Sellers, River John..................................

Rocklin.—President, Geo. W. McLeod, Burnside; Vice-President, Geo. T. Ken, Burnside; Secy-Treasurer, Ernest Fraser, Rocklin. Directors: Daniel Balfour, John G. Sutherland, John T. Ken, Burnside; Chas. Jardine, Wm. Jardine, White Hill. Auditors: John T. Ken, John G. Sutherland, Burnside..............................

Roger's Hill.—President, John Stewart, Scotsburn Sta.; Vice-President, J. T. R. Matheson, Scotsburn Sta.; Secy-Treasurer, W. S. McKean, Cross Roads Rogers Hill. Directors: Albert Graham, Rogers Hill Centre; Watson McKean, Geo. W. McKenzie, Cross Roads; John W. Fraser, Alfred Creighton, Scotsburn Station............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
21	48 00	40 55	93 00	53 00	40 00
175	147 75	209 29	2679 73	2307 34	372 39
22	46 00	38 86	181 04	165 20	15 84
20	40 00	33 79	New	Society	
53	105 50	89 12	201 00	219 66	18 66
15	40 00	33 79	80 75	23 72	57 03
24	48 00	40 55	219 32	92 75	126 57

Seaview.—President, Daniel R. McGillivray, Dunmaglass; Vice-President, Ronald H. McGillivray, Dunmaglass; Secy-Treasurer, Daniel R. McKinnon, Ardness. Directors: Ronald A. McGillivray, Angus B. McGillivray, Angus McEachern, Dunmaglass. Auditor: A. J. McGillivray, Dunmaglass..

Salt Springs.—President, R. A. Robertson, Salt Springs; Vice-President, K. A. Murray, Salt Springs; Secy-Treasurer, G. A. Proudfoot, Salt Springs. Directors: J. R. Young, Fred Setchell, Dan R. Robertson, John Muirland, Harry Brown, Salt Springs. Auditors: W. H. Gass, J. R. Bell, Salt Springs....................................

Scotsburn.—President, A. G. Stewart, Scotsburn Sta.; Vice-President, Hugh McKay, Scotsburn Sta.; Secy-Treasurer, Peter Fraser, Heathbell. Directors: D. W. Murray, Alex. McKay, Duncan Murray, Scotsburn Sta.; Hugh J. McLeod, Jas. R. Grant, Heathbell....................

Toney River.—President, John A. Colquhoun, Toney River; Vice-President, Jas. Elliot, Toney River; Secy-Treasurer, Dan A. McKenzie, Toney River. Directors: Daniel A. McDonald, Angus L. Henderson, Angus C. Grant, Toney River; John D. Munro, Dan D. McKenzie, Toney River Mills. Auditors: Geo. R. McDonald, Toney River; David Turner, Watuga.........................

Union Centre.—President, John Murray, Whitehill; Vice-President, John Munro, Union Centre; Secretary, Alex. Ross, Box 838 Westville; Treasurer, Warren McKenzie, Union Centre. Directors: Geo. Ross, Chas. Munro, Wm. Harris, Duncan Fraser, Wm. McDonald, Union Centre. Auditors: Jas. McLeod, John G. Munro, Union Centre...

Westville.—President, Murdock McLeod, Westville; Vice-President, J. T. McQuarrie, Westville; Secretary, K. J. McKenzie, Westville; Treasurer, Alfred McLeod, Westville. Directors: George Oliver, J. W. McLeod, J. R. Martin, R. C. Munroe, Westville. Auditors: D. Robertson, J. D. Fraser, Westville.....................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
20	40 00	33 79	95 91	85 23	10 68
20	60 00	50 69	128 84	186 36	57 52
28	60 50	51 11	137 86	101 25	36 61
23	64 00	54 06	158 44	93 36	65 08
21	40 50	34 21	106 87	73 50	33 37
49	82 00	69 27	107 00	82 60	24 40

West River.—President, Frank W. Smith, Cen. West River; Vice-President, Geo. Brownrigg, Central West River; Secy-Treasurer, W. O. Creighton, Central West River. Directors: Frank Cock, West River, W. McLean, John Proudfoot, Central West River; David Clark, Stewart McLellan, Durham. Auditors, George Smith, Central West River; Aubrey Clark, Durham..................

West Branch.—President, Daniel McKay, West Branch River John; Vice-President, John J. McKenzie, West Branch; Secy-Treasurer, Murdock Sutherland, West Branch Directors: Hugh R. Ross, Hugh D. McKenzie, Thos. G. Murray, Jas. Graham, West Branch; Alex. W. Murray, Murrayfield..................................

QUEENS COUNTY.

Kempt.—President, W. P. Freeman, New Grafton; Vice-President, Maurace Freeman, Kempt; Secy-Treasurer, Fred Kempton, Kempt. Directors: Ernest Kempton, Spurgeon DeLong, Melbourne Layton, Kempt; Enos German, Maitland; Gilbert Shupe, New Grafton................

Mutual Benefit.—President, S. Wyle, South Brookfield; Vice-President, H. L. Daley, North Brookfield; Secy-Treasurer, J. F. McLannan, North Brookfield. Directors: Judson Christopher, N. W. Frank, H. C. Harlow, Henry Silver, M. F. Cloph, North Brookfield. Auditors: Judson Christopher, H. C. Harlow, North Brookfield...........

North Queens.—President, G. W. Rafuse, Caledonia; Vice-President, J. W. Douglas, Caledonia; Secy-Treasurer, B. L. Telfer, Caledonia. Directors: Wilson Baxter, Zoeth Minard, J. W. Douglas, Melbourne Kempton, Caledonia.

South Brookfield.—President, Richard Hunt, South Brookfield; Vice-President, H. L. Spidle, South Brookfield; Secy-Treasurer, Josiah Smith, South Brookfield. Directors: Wrayton Freeman, J. W. Smith, L. A. Crocker, Chas. Spears, Robt. Smith, South Brookfield..........

RICHMOND COUNTY.

Arichat.—President, Hon. Isadore LeBlanc, Arichat; Vice-President, Reynolds Smith, Arichat; Secy-Treasurer, Jas. D. Power, Arichat. Directors: D. H. Campbell, John Tyrell, Chas. LeBlanc, M. B. McNeil, Philip Edwards, Arichat.......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
18	55 50	46 88	181 06	57 00	124 06
36	86 00	72 65	New	Society	
49	53 00	44 78	247 51	177 83	69 68
35	40 00	33 79	79 75	65 46	14 29
38	55 00	46 46	115 00	145 05	30 05
38	54 00	45 62	149 14	149 00	1 14
40	41 00	34 64	80 75	92 57	11 82

Cleveland.—President, J. C. McLeod, Cleveland; Vice-President, Angus Morrison, Cleveland; Secy-Treasurer, J. Howard McKichan, Cleveland. Directors: Malcolm McLeod, A. H. Ferguson, A. R. McDonald, J. Steele, Duncan McKillop, Cleveland. Auditors: W. E. Morrison, D. McKillop..

Grand Anse.—President, D. D. Buchanan, Grand Anse; Vice-President, Malcolm McPhail, Grand Anse; Secy-Treasurer, Dan A. McRae, Grand Anse. Directors: Murdock McPherson, Dan Ferguson, Grand Anse; John D. Kavanagh, Grand Anse Ferry; Matthew Hill, Geo. J. Hill, Balmoral......................................

Grand River.—President, Neil McCuspic, Grand River; Vice-President, Alex. D. McKay, Grand River; Secy-Treasurer, Alex. G. McKay, Grand River. Directors: Douglas Kemp, Geo. J. Mathesson, L'Archeveque; John F. Matheson, Alex. J. McKay, Archie McBeth, Grand River. Auditors: Alex. R. Urquhart, R. C. Matheson, Grand River..

Irish.—President, James Johnston, Red Islands; Vice-President, Peter Campbell, Red Islands; Secy-Treasurer, John J. Johnston, Red Islands; Directors: M. D. Johnston, J. C. D. Johnston, Red Islands; Joseph Cash, Irish Cove, Martin Johnston, Jas. J. Johnston, Hay Co ve..........

Mount Auburn.—President, D. J. McDermid, Mount Auburn; Vice-President, W. J. McLeod, Loch Lomond West; Secy-Treasurer, W. A. McDonald, Mount Auburn. Directors: N. D. Morrison, Loch Lomond West; D. N. McLeod, James E. Holmes, A. D. McDonald, Mount Auburn, John E. Holmes, Loch Side...................

Soldiers' Cove.—President, R. L. McDonald, Soldiers' Cove; Vice-President, J. J. McDonald, Soldiers' Cove; Secy-Treasurer, Stephen T. Thomas, Soldiers' Cove. Directors: Alex. McDonald, Wm. McDonald, Allan H. McDonald, Wm. Sutherland, John F. Gillis, Soldiers' Cove. Auditors: Peter McKenzie, Martin Gillis, Soldiers' Cove.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
25	42 50	35 90	45 86		45 86
26	49 00	41 39	New	Society	
20	40 00	33 79	209 76	182 80	26 96
16	40 00	33 79	New	Society	
16	55 00	46 46	130 70	72 00	58 70
18	45 00	38 01	110 00	92 14	17 86

West Bay.—President, Peter Dunphy, St. George's Channel; Vice-President, Duncan J. McRae, St. George's Channel; Secretary, Frank C. Cotton, St. George's Channel; Treasurer, Peter Dunphy, St. George's Channel. Directors: Wm. Campbell, Points' West Bay; Benj. McKenzie, Wm. H. Ross, St. George's Channel; John A. Smith, Dundee. Auditors: Murdock McInnis, John D. McRae, St. Georges' Channel..........................

SHELBURNE COUNTY.

Barrington Passage.—President, D. Sargent, Barrington Passage; Vice-President, T. W. Robertson, Barrington Passage; Secy-Treasurer, F. W. Sargent, Barrington Passage. Directors: Gilbert Crowell, Crowell P. O.; J. R. Gammon, W. L. Smith, G. W. Smith, J. H. Christie, Barrington Passage..........................

Shelburne.—President, Howard A. Harris, Welshtown; Vice-President, Lorenzo Jones, Upper Ohio; Secy-Treasurer, Wm. K. Hood, Shelburne. Directors: Henry W. Bower, Lower Ohio. W. E. Holden, Jordan Branch, W. I. Farquhar, E. L. Bower, L. O. Fuller, Shelburne..........

VICTORIA COUNTY.

Baddeck Bridge.—President, A. D. McRae, Baddeck, P. O. Box 172; Vice-President, Myles McInnis, Baddeck Bridge; Secy-Treasurer, W. G. McRae, P. O. Box 107, Baddeck. Directors: H. G. Matheson, Hunters' Mountain; A. J. Cain, Baddeck River; Duncan McRae, F. A. McRae, Baddeck Bridge; W. W. Nicholson, South Side Baddeck. Auditors: A. D. McCharles, Baddeck Bridge; John A. McDonald, Hunters' Mountain................

Baddeck Valley.—President, Jas. T. Kelley, Baddeck Forks; Vice-President, Alex. Gillis, North Branch Big Baddeck; Secy-Treasurer, Murdock R. McLeod, Baddeck Bridge. Directors: Albert Crowdis, Baddeck Bridge; W. A. Rice, D. McKenzie, John Buchanan, Forks Baddeck; Alex. Anderson, South Side Baddeck. Auditors: Alex. McAuley, McAuley P. O.; E. P. Rice, Forks, Baddeck....

Lake View.—President, Jas. C. McDonald, Baddeck; Vice-President, H. M. Crowdis, Baddeck; Secy-Treasurer, J. E. Campbell, Baddeck. Directors: E. G. McAskill, A. Y. McDonald, G. R. Anderson, A. S. McDonald, G. R. Anderson, A. S. McDonald, Jas. G. Dunlap, Baddeck. Auditors: G. F. McRae, A. S. McDonald, Baddeck.......

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
23	42 50	35 90	130 19	78 00	52 19
63	85 00	71 84	177 42	107 50	69 92
94	94 00	79 41	825 40	816 41	8 99
26	52 00	43 93	237 34	203 58	33 75
20	40 00	33 79	93 35	142 19	48 84
21	42 00	35 48	162 87	138 42	24 25

Middle River.—President, Forbes McDonald, Upper Middle River; Vice-President, Dan McDonald, Upper Middle River; Secy-Treasurer, D. McLennan, Upper Middle River. Directors: Wm. A. McDonald, Kenneth Finlayson, Rory J. McRae, Rory McLeod, John A. McDonald, Upper Middle River..........................

St. Ann's.—President, John Buchanan, South Gut; Vice-President, Auley G. Morrison, South Gut; Secretary, Duncan Smith, South Gut; Treasurer, John A. McLeod, North Gut. Directors: Murdock Matheson, Glen; Norman McAuley, North Gut; John C. McLeod, John Matheson, John P. McLeod, South Gut; Frank McLeod, Munroe's Point..

YARMOUTH COUNTY.

Brookside.—President, John Smith, East Pubnico; Vice-President, Rupert Larkin, East Pubnico; Secy-Treasurer, Chas. Wyman, East Pubnico. Directors: Arthur D'Entremont, Henry D'Entremont, Edwin Goodwin, Josiah Goodwin, East Pubnico. Auditors: Loran Smith, John Larkin, Geo. Fox, East Pubnico..............................

Kemptville.—President, Harry C. Prosser, Kemptville; Vice-President, S. J. Hatfield, Kemptville; Secy-Treasurer, A. M. Gates, Kemptville. Directors: A. M. Gates, Edgar Hurlbert, Jas. Mood, Merton Roberts, Leslie Prosser, Kemptville. Auditors: James Mood, Jonathan Randall, Kemptville............................

Yarmouth Central.—President, L. E. Crosby, South Deerfield; Vice-President, A. A. Crosby, Deerfield; Secy-Treasurer, Geo. C. Killam, Pleasant Valley. Directors: E. E. Porter, R. C. Wyman, Pleasant Valley; T. W. Roberts, Inglis Gavel, Deerfield. Auditors: J. A. Sanders, Fred Whitehouse, Pleasant Valley........................

Yarmouth County.—President, E. K. Spinney, Yarmouth; Vice-President, S. A. Cook, Yarmouth; Secy-Treasurer, Wm. Corning, Yarmouth. Directors: J. L. Lovitt, J. M. Porter, J. F. Palmer, John Corning, Walter Churchill, Yarmouth. Auditors: W. A. Godfrey, W. M. Kelley, Yarmouth...........................

Yarmouth Township.—President, Moses Harris, Hebron; Vice-President, John McCormick, Wellington; Secretary, W. A. Churchill, Lakeside; Treasurer, Asa Porter, Hebron. Directors: E. McCormick, Wellington; C. Rogers, Y. Moses, W. Hall, D. Saunders, Hebron.................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure.	Balance.
16	40 00	33 79	144 73	53 00	91 73
22	44 00	37 16	New	Society	
80	115 50	97 57	239 35	103 87	135 48
87	119 00	100 52	199 00	187 00	12 00
28	55 00	46 46	300 35	211 67	88 68
420	648 00	250 00	5979 33	4771 15	1208 18
61	167 00	141 08	317 33	191 75	125 58

REPORT OF STANDING FIELD CROPS COMPETITION FOR 1913.

Last year we stated that after several years of slow progress, interest in these competitions had begun to manifest itself. We are now glad to report that the interest is still rapidly increasing and that the results of these competitions are very satisfactory. In fact these competitions have grown so fast that the cost of conducting them has become a large item of expenditure. Fortunately, however, the Seed Commissioner of the Federal Department of Agriculture, realizing the importance of this work, has come to our aid, and now the cost of conducting Field Crops Competitions is equally borne by the Federal and Provincial Departments of Agriculture.

Last year there were nine counties in the Oats Competition and five in the Wheat, while this year there were thirteen in Oats and nine in Wheat. Furthermore, the entries in the Counties which competed last year increased about thirty per cent.

Nor does this tell the whole story, as the fields in the Competition were of a much higher standard than ever before. This is largely due to the fact that those entering the Competition learned that it was impossible to win without good seed, and once having learned the value of pure seed, go to considerable labor to keep it pure.

The benefits of the Competition, however, are by no means confined to the Competitors. Farmers throughout the Province who grow large quantities of grain are depending more and more on those who are producing pure varieties for the bulk of their seed and the prices they are willing to pay are very satisfactory.

Another pleasing feature of this line of work is that the Ontario men who have acted as Judges of seeds at our Maritime Winter Fair have invariably selected their prize winners from among those who stood highest in the Standing Field Crops Competition. This has advertised our seeds in other Provinces and as a result quite large quantities of Oats have gone to Quebec and Ontario for seed.

For the Potato Competition the Province was divided into four districts and prizes awarded according to the number of entries. There were contests in three of the sections, in two of which the entries were large. The judging was done by Professor Paul A. Boving, of Macdonald college and the following extract from his Report may be of interest:—

"Scoring, of course, is always more or less individual. One judge is perhaps a little more severe, another judge, again, may be inclined to be a little more lenient in his scoring. But where one man judges all the fields in a competition of this kind a just basis is obtained for a comparison between the different fields. Looking over the results it will be found that nineteen of the fields, or slightly more than 40 per cent., scored over 85 points out of a possible 100. This must be considered as a very good result, and it speaks well for the intelligence and perseverance of the Nova Scotia farmers."

In the Competition for the best acre of turnips grown by a boy between 15 and 20 years of age, the Competition was very keen. As previously stated the money for this competition was very generously donated by a former Nova Scotian now residing in New York.

In addition to the prizes offered by this gentleman the Nova Scotia Government gave a prize of $5.00 in each County for the three highest scores following the prize winners, and a prize of $3.00 for the next two highest scores.

There were fourteen entries in Colchester County and fifteen in Cumberland County, and the fields with few exceptions were excellent.

Last year, owing to a very wet season, the results were largely due to soil conditions, while this year the nature of the soil had little effect on the results. Other things being equal, skill in preparing the soil, the use of good seed and thorough and persistent cultivation were the factors which won results this year.

As one of the judges, I must say that it was a pleasure to note the keen interest and careful watchfulness of the competitors, and I will further state that the best fields of turnips in the Province were those in the Competition, and many older men would do well to write to some of these boys for information on the growth of this important crop.

In giving the estimated cost per bushel, the figures ranged from six cents to ten cents per bushel. I may say in explanation of this that where the figures neared ten cents per bushel the boys had a tough piece of land to start with.

On the following pages will be found the names of the competitors and the scores made in the several contests.

Respectfully submitted,

F. L. FULLER.

OATS.

Annapolis County.

Name	Variety	Score	Prize.
L. W. Elliot, Clarence	Banner	92¼	1st
V. B. Leonard, Cen. Clarence	Banner	89	2nd
Allan Bezanson, Clarence	Banner	87¾	3rd
Arthur Phinney, Paradise	Banner	83¼	4th
F. W. Bishop, Paradise	Banner	77¾	

Antigonish County.

C. Chisholm, Salt Springs	Danish Island	96¾	1st
Crockett Bros., Antigonish	Banner	96½	2nd
Taylor Bros., Antigonish	Banner	93¼	3rd
P. J. Hanrahan, Fairmont	O. I. Black	92¾	4th
Ronald Chisholm, Briley's Br'k	Banner	92½	5th
John Inglis, No. Lochaber	20th Century	92¼	6th
J. W. McDonald, Briley's Br'k	Banner	92	7th
Donald McGregor, Up. S. River	Banner	91¾	8th
Jas. Dunn, Lo. So. River	Banner	91½	9th
Angus R. Boyd, Morristown	20th Century	91¼	10th
J. A. MacDonald, Maryvale	Banner	91	11th
Geo. McIsaac, Antigonish	Banner	90½	12th
Alex. C. Chisholm, N. Grant	Banner	89¾	
Mrs. A. J. Ross, N. Grant	Banner	89½	
D. M. McDonald, Arisaig	Banner	89½	
Art. Sutherland, Copper Lake	Tartar King	88½	
Colin Chisholm, Lanark	Banner	85½	
Rod H. Chisholm, S.S Harbor	Early Blossom	84¾	
Alex. McPherson, Cloverville	Abundance	84½	
D. C. McNeill, Brophy's	Banner	84	

Colchester County.

J. R. Semple, Brule	Banner	96½	1st
Geo. Burrows, Valley	Early Blossom	95½	2nd
R. D. MacKay, Balmoral Mills	Banner	94	3rd
Wilmot Fulton, Lr. Stewiacke	Banner	93	4th
J. W. Murray, Balmoral Mills	Banner	92½	th
Geo. Retson, Brookside	Banner	92	
J. L. Cunningham, Bayhead	Banner	91½	
J. J. Gourley, Stewiacke	Banner	90½	
Jas. R. Hogan, Denmark	Banner	90½	

Cumberland County.

W. G. Oulton, Lorneville	Banner	98¼	1st
Clark McFarlane, Fox Hbr.	Banner	96¼	2nd
Fowler Bros., Amherst Pt.	Banner	96¼	2nd
Harry R. Brown, Wallace Bay	Banner	94½	3rd
A. Bradshaw, Amherst	Banner	92	4th
M. B. Harrison, Athol	Banner	91¾	5th
Jas. I. Stewart, Amherst Pt.	Banner	91¾	5th
C. W. Pugsley, Barronsfield	Banner	91½	
Geo. Ripley, Nappan	Banner	88¾	
Fred. S. Black, Amherst	Banner	85	
Silas M. Stiles, Amherst	Banner	82	

Cape Breton County.

Murdock McGregor, Hillside (Boulardarie)	Island Blk.	89½	1st
Thos. P. Bownar, Pt. Aconi	Island Blk.	89	2nd
John McAuley, Millville (Boulardarie)	Island Blk.	87¼	3rd
Jas. Campbell, Big Pond Centre	Island Blk.	86½	4th
Rod. McLeod, Groves' Pt.	Island Blk.	85½	5th
R. G. Grant, Pt. Edward	Banner	85½	5th
Chas. Moore, Leitche's Creek	Island Blk.	85	

Guysboro County.

John T. McBain, New Town	Banner	92	1st
J. J. McNeil, Grant's Lake	Banner	91¾	2nd
John A. Sinclair, Goshen	Banner	91½	3rd
Daniel McDonald, So. Lochaber	Tartar King	91	4th
David Cameron, New Town	Tartar King	90¾	5th
John F. Wall, Goshen	Tartar King	90½	6th
Leonard A. Sinclair, Goshen	Ligowo	90	7th
Wm. McDonald, So. Lochaber	Blk. Tartarian	90	8th
A. F. McNaughton, Goshen	Banner	89	
A. T. McBain, New Town	Banner	88½	
Ivan Cumming, Goshen	Banner	88½	
Harry Sinclair, Goshen	Banner	88	
Athol Hattie, Goshen	Tartar King	87	
T. A. McKeen, Aspen	Banner	86½	

Halifax County.

Robt. McCurdy, Mid. Mus'd'b't	Banner	95½	1st
Robt. Kaulback, Mid. Mus'd'b't	Banner	94½	2nd
John Ogilvie, Elderbank	Banner	92½	3rd

Adam Archibald, Mid. Musquodoboit	Banner	91	4th
Jos. Bruce, Musquodoboit	Banner	90½	5th
A. D. Burris, Up. Mus'd'b't.	Banner	90	6th
Arnold Gladwin, Mid. Mus'd'b't	Banner	89½	7th
Wm. Logan, Mid. Mus'd'b't.	Banner	89	
S. H. Taylor, Chasswood	Banner	87½	
David Archibald, Cen. Musquodoboit	Banner	87	
Wm. Archibald, Cen. Mus'd'b't	15 lb. Blk	84½	
Wm. Bentley, Mid. Mus'd'b't.	Banner	84	
John Jennings, Newcomb's Cor	Banner	83½	

Hants County.

Robie Palmer, Windsor Forks	Banner	92	1st
Harry Stewart, Shubenacadie	Banner	91¼	2nd
Fred Lawrence, Brooklyn	20th Century	88	3rd
John Duncanson, Falmouth	Banner	87¼	4th
Ralph Duncanson, Falmouth	Banner	87	5th
Jas. R. Hanson, Falmouth	Banner	86¾	6th
Medford Taylor, Falmouth	Banner	86½	7th
Geo. Haley, Windsor	Sensation	85¼	
Wm. O'Brien, Windsor Forks.	Banner	85	
Jas. Bell, Shubenacadie	Banner	84	
Geo. O. Smith, Scotch Village	Anchor	83½	
J. F. Withrow, Shubenacadie	Banner	82	
Thos. Aylward, Falmouth	Banner	77½	

Inverness County.

Pat'k. N. Tompkins, E. M'ee	Is. Black	95	1st
Angus R. Campbell, Alexander	Wht. Irish	93	2nd
A. T. Beaton, Brook Village	Banner	92¾	3rd
John J. McNeil, Scotch Hill	Banner	92½	4th
Angus R. McDonald, Broad Cove Chapel	Is. Black	92	5th
John B. McLellan, Glenville	Is. Black	91¾	6th
L. L. McNeil, Scotch Hill	Banner	91½	7th
A. J. Campbell, Alexander	Wht. Wave	91¾	8th
Dan F. Beaton, Glenora Falls	Wht. Wave	91	9th
Peter M. Chaisson, Margaree Forks	Banner	90½	10th
Allan D. McLellan, Glenville	Is. Black	90¼	11th
J. J. McLellan, Glenville	Banner	89½	12th
A. Scott McDonnell, Port Hood	Banner	89¼	13th
D. McPherson, P. P., Glendale	Banner	89	14th
Archy Campbell, Alexander	Wht. Wave	87¾	15th

Malcolm McKinnon, E. L. Ainslie	Blk. Cluster	87½	
Ed. Smith, Blackstone	Wht. Wave	87¼	
John Beaton, Blackstone	Wht. Wave	87¼	
Jas. Beaton, Alexander	Wht. Wave	86½	
John A. McIsaac, Blackstone	Wht. Wave	86	
Chas. J. McLean, Glenville	Is. Black	85½	
Alf. J. Taylor, Marg'ee Har	Banner	85	
David McKinnon, E.L.Ainslie	Banner	84¾	
Andrew McLellan, Glenville	Is. Black	84½	
Finlay Beaton, Blackstone	Wht. Wave	84¼	
John A. McLellan, Glenville	Is. Black	83½	
Dougald Campbell, Margaree Forks	Banner	83	
Wm. McLean, North Ainslie	Is. Black	82	
Dan. A. McLellan, Glenville	Wht. Wave	81	

Lunenburg County.

Mark Rodenhizer, West Northfield	Tartar King	92¾	1st
Owen G. Dauphinee, Bridgewater	Banner	91¼	2nd
Wallace Rodenhizer, Bridge water	Banner	88¾	3rd
H. T. Hebb, Bridgewater	Banner	87¾	4th
Jos. McKay, Up.Northfield	Tartar King	83½	5th
Asaph McKay, Up.Northfield	Tartar King	80¾	
Willis Fancy, Bridgewater	Banner	80½	
A. W. Hebb, Bridgewater	Banner	77¾	

Pictou County.

J. W. Maxwell, Durham	Banner	94¾	1st
G. Wm. Grant, Lyon's Brook	Banner	91¼	2nd
Geo. Milne, Woodburn	Banner	89	3rd
Hugh McLeod, Heathbell	Banner	88¾	4th
Calvin Langille, Marshville	Belgian	88½	5th
R. D. Ross, Bayview	Banner	88	
Falconer McDonald, New Glasgow	Banner	85	
Renwick Tattrie, Louisville	Banner	83¼	
J. H. McKay, Scotsburn Sta	Banner	80¼	

Richmond County.

John L. McAuley, Grand River	Banner	94¾	1st
Wm. Kempt, L'Archeveque	Banner	94½	2nd
Alex. MacKay, Grand River	Banner	93½	3rd

Rev. R.L.McDonald,St.Peters	Banner	90½	4th
Philip McAuley, W. S. Grand River	Banner	90¼	5th
Geo. J. Matheson, L'Archeveque	Banner	90	6th
Duncan Matheson, W.S.Grand River	Banner	89¼	7th
Michael McDonald, Soldier's Cove	Is. Blk	89	8th
Murdo A. McLeod, Loch Lomond W.	Banner	89	8th
Martin Gillis, Soldier's Cove	Is. Blk	88½	9th
Alex. Matheson, L'Archeveque	Banner	88	10th
Jos. Gillis, Soldier's Cove	Is. Blk	87¾	11th
R. C. Matheson, E. S. Grand River	Banner	87½	
Allan D. McCuish, Drummondville	Banner	87½	
Angus McDonald, Soldier's Cove	Banner	85	
Dan D. McKay, The Points (West Bay)	Wht. Russian	84¾	
Ernest Mariner, Lake Uist	Blk. Tartarian	84½	
F. C. Cotton, St. Geo's Chl	Ligowo	84¼	
Wm. Campbell, St. Geo's Chl	Ligowo	84	
D. J. McDurmid, Mt.Auburn	Is. Blk	84	
Wm. Sutherland, Soldier's Cove	Banner	81	

Yarmouth County.

Harry Cann, Chegoggin	Banner	93¾	1st
John C. Corning, Chegoggin	Banner	92	2nd
Murray Crosby, Dayton	Banner	89	3rd
Stephen A. Cook, Central Chebogue	Banner	88¾	4th
A. Corning, Chegoggin	Banner	88	

WHEAT.

Annapolis County.

V. B. Leonard, Cen. Clarence	Red Fife	93½	1st
Thos.E.Smith, Cen.Clarence	Marquis	85¼	2nd
E.M.Marshal, Cen.Clarence	Red Fife	80¼	3rd
Arthur Phinney, Paradise	Wht. Russian	77	4th
F. W. Bishop, Paradise	Early Russian	Not scored	

Antigonish County.

Jas. Dunn, Lower So. River	Wht. Russian	96¾	1st
Alex. C. Chisholm, No. Grant	Red Fife	94¼	2nd
Thos. Hogan, Antigonish Har	Wht. Russian	92	3rd
Colin Chisholm, Lanark	Wht. Russian	90¾	4th
Alex. McPherson, Cloverville	Wht. Russian	89¾	5th
Mrs. Allen J. Ross, No. Grant	Red Fife	88¼	6th
Ronald Chisholm, Antigonish	Wht. Russian	87½	7th
Angus R. Boyd, Morristown	Wht. Russian	86¾	
P. J. Hanrahan, Fairmont	Wht. Russian	86¼	
John W. McDonald, Briley's Brook	Wht. Russian	85¾	
Dan R. McDonald, Lakevale	Wht. Russian	84¾	
Rod H. Chisholm, So. Side Har	Wht. Russian	83½	

Colchester County.

R. D. McKay, Balmoral Mills	Red Fife	95½	1st
J. L. Cunningham, Bayhead	Wht. Russian	93½	2nd
Wm. Mingo, Denmark	Wht. Russian	92½	3rd
J. W. Murray, Balmoral Mills	Red Fife	92	4th
J. J. Gourley, Stewiacke	Wht. Fife	91	5th
Jas. A. Hogan, Denmark	Wht. Fife	89	
Geo. K. MacKay, Balmoral Mills	Red Fife	88½	

Cumberland County.

W. L. McFarlane, Fox Harbor	Red Fife	94½	1st
W. G. Oulton, Lorneville	Wht. Fife	94¼	2nd
John R. Harrison, Maccan	Wht. Russian	93	3rd
M. B. Harrison, Athol	Rigot	92½	4th
S. A. Logan, Amherst Pt	Wht. Fife	90¾	5th
Fred S. Black, Amherst	Wht. Russian	90	
W. A. Costin, Amherst	Wht. Russian	89½	
A. Bradshaw, Amherst	Wht. Fife	85	
Clark McFarlane, Fox Harbor	Wht. Fife	82½	

Cape Breton County.

John McMullen, George's River Sta	Red Fife	94	1st
Rod McLeod, Groves Pt	Wht. Russian	93¾	2nd
E. J. Johnson, George's River	Wht. Russian	89½	3rd
Alex. W. Gillis, George's River Sta	Wht. Russian	89¼	4th
M. D. McMillan, Big Pond	Wht. Russian	83½	

Halifax County.

Robt. Kaulback, Mid Mus'd't.	Red Fife	92½	1st
Adam Archibald, Mid Mus'd't.	Wht. Russian	92¼	2nd
Roy McCurdy, Mid. Mus'd't.	Wht. Fife	92	3rd
A. D. Burris, Up. Mus'd't.	Red Fife	91½	4th
Jos. Bruce, Mid Mus'd't.	Marquis	91	5th
David Archibald, Cen. Mus'd't.	Red Fife	88	6th
John Ogilvie, Elderbank	Red Fife	86½	7th
Wm. Logan, Mid. Mus'd't.	Marquis	85	
Wm. Archibald, Cen. Mus'd't.	Wht. Fife	84½	
Frank Jennings, Newcomb's Cor	Wht. Fife	84	
Howard Fulton, Reynolds	Wht. Fife	80½	

Hants County.

Jas. Smith, Up. Falmouth	Wht. Russian	85½	1st
J. A. Reynolds, Newport	Red Fife	84½	2nd
Fred Lawrence, Brooklyn	Red Fife	83½	3rd
B. D. Payzant, Falmouth	Wht. Fife	83	4th
Jas. Hanson, Falmouth	Red Fife	82½	5th
Jas. Bell, Shubenacadie	Red Fife	79	
Chas. McDonald, Falmouth	Wht. Russian	74½	

Inverness County.

D. McPherson, P.P., Glendale.	Wht. Russian	92	1st.
A. Scott McDonnell, Port H'd.	Red Fife	91½	2nd
A. J. Campbell, Alexander	Wht. Russian	80¾	3rd
Nathan Smith, Hillsboro	Wht. Russian	78	4th
Angus R. Campbell, Alexander,	Red Fife	75½	

Pictou County.

Falconer McDonald, New Glasgow	Campbell's Wht. Chaff	97¼	1st
J. W. Maxwell, Durham	Wht. Russian	95	2nd
A. D. McKay, Pictou	Wht. Russian	93	3rd
Arthur Wallace, Pictou	Wht. Russian	92¾	4th
John R. Reid, Little Harbor	Marquis	91¾	5th
Geo. Milne, Woodburn	Wht. Fife	90½	
Geo. Cameron, Bayview	Wht. Russian	89¾	
Alfred Hamilton, River John	Wht. Russian	83¾	

Richmond County.

Wm. H. Ross, St. Geo's Chan.	Wht. Russian	88	1st
Benj. McKenzie, "	Wht. Russian	87¾	2nd
Mrs. Duncan McInnis "	Wht. Russian	85¾	3rd
Murdock McInnis "	Wht. Russian	85½	4th
Jas. D. Calder "	Wht. Russian	84½	

POTATO COMPETITION.

District No. 1—Digby, Yarmouth, Shelburne and Queens Counties.

No Competition.

District No. 2.—Annapolis, Kings, Lunenburg and Hants Counties.

Albert Veinotte, West Northfield, Lunenburg Co	95	1st	$8.75
Jos. McKay, Up. Northfield, Lunenburg Co	91½	2nd	7.87
Wallace Rodenhizer, Bridgewater, Lunenburg Co	88	3rd	7.00
Wm. Sharpe, Windsor, Hants Co	87	4th	6.75
Asaph McKay, Upper Northfield, Lunenburg Co	85½	5th	6.47
L. W. Saunders, Dalhousie East, Kings C	78½	6th	4.62
A. W. Hebb, Bridgewater, Lunenburg C	77½	7th	3.87
H. A. Longley, Paradise, Annapolis Co	75½		
Harris Shaw, Windsor Forks, Hants Co	73		
Stewart Leonard, Paradise, Annapolis Co	68½		
Ralph Duncanson, Falmouth, Hants Co	59		

District No. 3.—Colchester, Cumberland, Pictou and Antigonish Counties.

Alex. Chisholm, No. Grant, Antigonish Co	94	1st	$8.50
R. D. Ross, Bayview, Pictou Co	92	2nd	8.00
Wm. McKenzie, Green Hill, Pictou Co	90	3rd	7.50
Fowler Bros., Amherst Pt., Cumberland Co	88	4th	7.00
Jas. R. Hogan, Denmark, Colchester Co	87½	5th	6.87
John J. Inglis, North Lochaber, Antigonish Co	86½	6th	6.62
Wm. Beatty, Amherst, Cumberland Co	84	7th	6.00
E. Russel Stewart, Old Barns, Colchester Co	83	8th	5.75
Arthur Wallace, Pictou, Pictou Co	82	9th	5.50
Milford Baxter, Truemanville, Cumberland Co	80		
Angus Cameron, McPherson's, Antigonish Co	79½		
J. B. McIsaac, Dunmore, Antigonish Co	78½		
Ronald Chisholm, Briley's Brook, Antigonish Co	78		
Arthur Tuttle, Wallace Bay, Cumberland Co	74		
T. F. Grant, Antigonish, Antigonish Co	72		

District No. 4.—Halifax, Guysboro, Inverness, Cape Breton, Victoria and Richmond Counties.

Adam Archibald, Middle Musquodoboit Halifax Co.	93½	1st	$8.37
Hugh McPherson, Mabou, Inverness Co.	92½	2nd	8.12
Ed. Smith, Blackstone, Inverness Co.	90½	3rd	7.62
A. D. Burris, Middle Musquodoboit, Halifax Co.	90	4th	7.50
Dougald Campbell, Margaree Forks, Inverness Co.	89½	5th	7.37
Allan McCuish, Lochside, Richmond Co.	89	6th	7.25
A. T. Beaton, Brook Village, Inverness Co	88½	7th	7.12
J. J. McLellan, Glenville, Inverness Co.	85	8th	6.25
Jas. Beaton, Alexander, Inverness Co.	82	9th	2.75
A. J. Campbell, Alexander, Inverness Co.	82	9th	2.75
D. N. Morrison, Drummondville, Richmond Co.	80		
A. C. McBeth, Grand River, Richmond Co.	79		
J. J. McNeil, Giant's Lake, Guysboro Co.	78½		
W. C. McLeod, Drummondville, Richmond Co.	78½		
Chas. J. McLean, Glenville, Inverness Co.	74½		
Angus R. McDonald, Broad Cove Chapel Inverness Co.	74		
John McMullen, George's River Station, Cape Breton Co.	70		
Hugh McMullen, Glenora Falls, Inverness Co.	68		

TURNIP COMPETITION.

Colchester County.

John A. Semple, Brule	89	1150	1st	$75.00
Frank S. Crowe, Old Barns	88½	1300	2nd	50.00
Earl Jennings, Masstown	87	1050	3rd	30.00
Albert Burrows, Valley Station	86	1050	4th	20.00
Jas. Creelman, Halfway Brook	85½	1050	5th	5.00
Lloyd Johnson, Up. Stewiacke	84	1050	6th	5.00
Baxter Fulton, Bass River	82½	1100	7th	5.00
H. Kilminster, Mid. Stewiacke	81½	900	8th	3.00
Wallace Bowers, Great Village	81½	1000	8th	3.00
Russel Stewart, Clifton	77½	875		
Elmer Henderson, McClures		*600		
Oscar Fulton, Cross Roads		*600		
Wm. Brenton, Brentwood		*500		
Harold Cranton, Salmon River		*400		

*—Estimated Yield.

Cumberland County.

Manford Oulton, Lorneville	90½	1350	1st	$75.00
Donald Tuttle, Wallace Bay	89½	1300	2nd	50.00
Roy Jackson, Lorneville	89	1200	3rd	30.00
Russel Wells, Wallace Bay	85	1050	4th	20.00
Laurie A. Brown, Pugwash	83½	1050	5th	5.00
Chas. T. Plimmer, Wallace	83½	1050	5th	5.00
Lyman Chapman, Hastings	83	900	6th	5.00
Geo. I. Herrett, Windham Hill	82	1050	7th	3.00
Alton B. Forshner, Wallace Bay	81	1100	8th	3.00
Lloyd M. King, Tidnish	80	900		
Earl Black, Salem	77	750		
Wm. Haycock, Wallace	76½	1000		
Hugh Logan, Stanley	75	700		
Zedie Parker, Green Hill		*600		
Wm. Tuttle, Wallace		*700		

*—Estimated Yield.

DEMONSTRATION TURNIP GROWING PLOTS.

To those of us whose duty frequently called us to the Eastern part of the Province and especially to the Cape Breton Counties, the lamentable absence of any effort to grow roots as a fodder crop was very apparent.

This seemed to us particularly unfortunate as the winter transportation in many sections are none too good and mill feeds, which could be used to take the place of roots to some extent, were expensive.

Furthermore, in many sections in Cape Breton Island extensive intervales produce large quantities of rather ordinary class of hay.

A liberal supply of roots added to this hay makes excellent food for young and growing cattle, while hay alone merely sustains life. The farmers depending on the summer months to get growth from their animals thus lose one-half of the year.

Being forcibly impressed with the absence of roots under conditions where they seemed so necessary, I began looking for the reason, and the best one I found was that the farmers labored under the impression that it was impossible to grow roots successfully. However, we found some enthusiastic agriculturalists who shared our views that this general opinion was not founded on facts. Notably among these men Rev. D. McPherson, P. P., of Glendale, took an active part.

As a result of conferences with Principl Cumming, Secretary for Agriculture, I found myself in the Spring of 1912 committed to the undertaking of growing an acre of turnips on the Glebe Farm at Glendale, and, notwithstanding the facts that the field had been only partially prepared, needed underdraining, an unfavorable season and a lack of time on my part to give it the proper attention, the results were fairly good and were considered wonderful in that section. They were at least sufficiently encouraging to warrant an extension of the work.

Not having time to look after the matter personally, the services of Mr. H. S. Cunningham, a graduate of the Nova Scotia Agricultural College, were secured to look after the work. Early in May in company with Mr. Cunningham I visited Cape Breton, where we located plots for the season's work. The plots were located in different parts of the Island and were selected with a view to giving assistance where most needed, and at the same time within view of the most prominent public highways.

Eight plots were so located and were looked after entirely by Mr. Cunningham, a full report of which is submitted herewith. I can only say that Mr. Cunningham's work was entirely satisfactory and the results obtained such a nature as to encourage the Department of Agriculture to further extend the work, and already eight additional plots have been selected and partially prepared for next season's work.

Respectfully submitted,

F. L. FULLER.

Mr. F. L. Fuller,
Superintendent Agricultural,
Truro, N. S.

Sir:—Knowing that the average farmer does not realize the value of roots as a food for live stock, and realizing the fact that the acreage devoted to this valuable crop, throughout a great many sections of the Province is far too small, it was thought advisable to show by practical demonstration, the comparative ease and small cost with which this crop could be raised.

In the Spring of 1912, an acre of land was selected at Glendale, Cape Breton, and under the direction of Mr. F. L. Fuller, was sown to turnips. The yield on this plot was about 600 bushels, an unheard of quantity in that district. The farmers in that district took a great interest in the work and this season several of these men raised splendid crops of turnips where previously they had not grown even enough for table use.

Owing to the interest taken in this district it was decided to extend the work during the past season and accordingly several plots were chosen in different parts of Cape Breton Island. The plots were chosen with the object of having them in as conspicuous a position as possible, regardless of the kind or condition of the soil. They varied in size from one-half acre to an acre and the treatment in preparation for and caring for the crop was practically the same on all plots. Plots were worked with what implements were available on the farm on which the plots were located.

Each plot was plowed in the spring and received a dressing of stable manure varying at the rate of from twenty to thirty loads per acre. When a disc harrow was available the manure was well worked in with this, and if not, a spring tooth harrow was used for this purpose. Where the plots were sod land (fall plowed) or had received no preparation the previous fall, they were plowed the second time and thoroughly worked with the harrows before drilling.

Drills were made by first making shallow marks with the plow, twenty-eight inches apart, stakes being used for the purpose of keeping them straight and an even distance apart.

The fertilizers, which were previously mixed on the barn floor, were sown in this mark and the drill proper made by covering in the fertilizer. The drills were then raked off with a garden rake or, if there were no sods or large stone to bother, a spike tooth harrow was used for this purpose. A rope was attached to the back corner of the harrow so the driver would have some control over it. In this way the drills were leveled much more quickly and practically as well as could be done with the rake.

The greater part of the seeding was done with a hand drill seeder which gave good satisfaction. On all plots, however, a few drills were sown by using the marker, the perforated tin can seeder, and covering with the back of the garden rake. Seed was sown at the rate of from two to three pounds per acre. The plants were thinned as soon as possible after the third leaf was well developed but, owing to the number of plots and the fact that they were distributed over a large area, on some of the plots the plants were entirely too large before they were thinned.

The men who owned the plots were responsible for the cultivation. In the majority of cases they were well cared for but in the case of one or two plots the cultivation was sadly neglected and the crop suffered as a consequence. The season was a very favorable one and the yields were good where the plots received ordinary care.

Plots intended for roots next year were plowed this fall, the majority being plowed shortly after the hay was off and harrowed occasionally after plowing, then plowed again late in the fall. Owing to the continued wet weather during the month of October, it was impossible to keep the harrow going as frequently as we would have liked to have done.

The demonstration work will not, however, be confined to the growing of roots alone. Next spring those plots on which roots were grown during the past season will be sown to grain and seeded out with a goodly percentage of clover. After one crop of hay is taken they will be again prepared for a root crop, thus showing the advantages of a rotation.

The main object of this work is to help the people and, while it would not be possible for the demonstrators to visit every farm, they will do all in their power, either in person or by correspondence, to give any assistance which may be asked for in solving the ordinary problems of the farm.

As it was decided to extend the work still further during the coming season the following places were chosen as suitable ones to locate plots in addition to the ones worked this season:

David Tompkins, Northeast Margaree.
Rev. A. R. McDonald, P. P., Christmas Island,
Angus McInnis, South Side Big Baddeck,
Duncan McLellan, Upper Middle River.
Neil McKinnon, Kemp's Head (Boularderie),
Rod Campbell, Hillside (Boularderie),
Rev. J. McDonald, P. P., St. Peter's,
Alex. Munroe, Marion Bridge.

SUMMARY FOR 1913.

NAME AND ADDRESS	Size of Plot	Kind of Soil	Previous Crop	Amount Fertilizers				Date of Seeding	Date of Thinning	Yield per Acre
				Barn manure	Nitrate Soda	Acid Phos.	Muriate Potash			
C. A. Munn, Leitches' Creek...	½ acre	Sandy loam	Corn	27	100	600	150	June 6	July 9	1250
A. Archibald, Pt. Hastings....	½ acre	Clay loam	Mangels	10	175	400	125	June 9	July 5	1050
A. S. McDonnell, Port Hood..	⅔ acre	Sandy loam	Oats	15	200	600	150	June 11	July 14	1164
J. A. McDonald, Judique.....	¾ acre	Peaty	Hay	15	200	800	150	June 19	July 16	508
Rev. D. McPherson, P.P. Glendale	½ acre	Clay	Hay	10	200	600	200	June 16	July 18	820
M. McDonald, Soldier's Cove..	¾ acre	Sandy loam	Oats	20	200	1000	200	June 23	July 22	668
F. C. Cotton, St. Geo's Channel	1 acre	Clay	Oats	30	200	1000	250	June 27	July 24	850
D. D. McLellan, Glenville.....	1 acre	Sandy loam	Hay	20	200	400	200	July 4	July 30	625

Some simple fertilizer experiments were carried on on each of the plots to ascertain which fertilizer, or combinations of fertilizers, were best suited to that particular soil and to prove that a judicious use of commercial fertilizer was a good investment.

As could be expected, the results varied, owing chiefly to the previous cropping, previous methods of cultivation and character of the soil.

Unless one actually saw the plots it would seem impossible that such an increase could be obtained from the use of fertilizers alone, but when one knows the character of the soil on which these results were obtained, he can readily see how they could be obtained.

On Plot No. 1 the soil was poor and the barn manure used was of the poorest quality, kept under the worst conditions possible for conserving plant food.

The soil on Plot No. 2 was of better qualtiy, as was also the barn manure used. The following figures give a general idea of the value of different kinds of fertilizer used:—

Plot No. 1 at Soldier's Cove.

Barn manure alone yeilded at the rate of 84 bus. per acre.
An additional $6.00 worth of Nitrate of Soda yielded at the rate of 168 bus.

An additional $6.00 worth of Muriate Potash yielded at the rate of 651 bus.

An additional $9.00 worth of Acid Phosphate yielded at the rate of 850 bus.

Plot No. 2 at St. George's Channel.

Barn manure alone yielded at the rate of 450 bus. per acre.

An additional $600 worth of Nitrate of Soda yielded at the rate of 774 bus.

An additional $6.00 worth of Muriate Potash yielded at the rate of 450 bus.

An additional $9.00 worth of Acid Phosphate yielded at the rate of 1044 bus.

Respectfully submitted,

H. S. CUNNINGHAM.

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to make my fifth annual report of County and District Exhibitions.

At the last session of Legislature the Exhibition Act was amended making it possible to divide the Province into Exhibition Districts rather than Counties.

It also made provision for holding district exhibitions by combining two or more Counties.

Furthermore, the grant was increased from $300 for each County to a minimum of $300 for each County or district and fifty per cent of the prize money was paid out over and above $300, the total paid not to exceed $500 for any one County or district.

Thus, local fairs which have been making excellent progress for a number of years received a further stimulus.

Thirteen successful exhibitions were held during this year.

One of these was held at Sydney and included the four Cape Breton Counties. This was a very successful show and paid out upwards of $4000 in prize money. The whole Island was fairly well represented. Live stock exhibits were brought out in good form and the indoor exhibits were especially roots, vegetables and grain of excellent quality and attractively displayed.

The exhibition held at Windsor embraced the Counties of Annapolis, Kings and Hants and was an excellent fruit, vegetable, poultry and horse show. Prize money amounted to $1350.85.

An exhibition held at Stewiacke included Colchester and East Hants. While they have no permanent shelter for animals, they had excellent weather and a fine display of live stock.

The largest single County show was held at Yarmouth where the amount of prize money paid was a trifle short of $2000. Pictou was a close second with nearly $1600. Lunenburg County also held a very successful show at Bridgewater, where upward of $1000 was distributed for prizes.

For the most part excellent weather prevailed and receipts were good and the interest very keen.

While Guysboro suffered for the second time from bad weather, they were by no means discouraged and had a very good show.

For the first time an exhibition was held in the municipality of Clare in Digby County, and considering the short preparation and their inexperience, they had a wonderfully good show.

The exhibitions, as formerly, were arranged in circuits and expert judges supplied by the Department of Agriculture. Those who assisted us this year were:—J. R. Starr, Wm. Murray, S. A. Logan, Prof. J. M. Trueman, Prescott Blanchard, J. P. Landry, W. H. Henry, Thos. Latham, B. H. Landels, Harvey Mitchell, W. A. MacKay, Prof. W. S. Blair, Geo. H. Vroom, S. J. Moore, Jas. Allen, H. S. Cunningham and Roy B. Pipes.

The following table gives list of exhibitions with main items of receipts and expenditures.

Respectfully submitted,

F. L. FULLER.

EXHIBITIONS 1913.

County	Town	Dates	Secretary	Gate Receipts	Number of Exhibits	Prize Money Paid	Total Receipts	Total Expenditure
Antigonish. . .	Antigonish. . .	Sep.18,19. . . .	Allan McDonald			$742.35		
Cape Breton	Sydney.	Sep.3,Oct.1–4	S.P.Challoner. . .	$5305.10	4559	4051.00	$10865.44	$11866.47
Cumberland.	Parrsboro. . . .	Sept.25,26. . .	A.B.Lusby.	647.00	1065	726.30	1456.22	1411.37
Colchester & E. Hants. .	Stewiacke. . .	Sept.23,24. . .	A.D.Fulton.	587.00	1893	1044.65	2259.68	2036.40
Digby.	Digby.	Oct.10.	F.W.Nichols. . . .	350.95	650	328.95	692.43	617 47
Guysboro. . . .	Guysboro. . . .	Oct.3,4.	Chas.E.Jost.	249.91	895	520 55	865.94	775.42
Kings, Hants & Annapolis	Windsor.	Oct.7,8,9. . . .	J.D.Currie.	1046.07	3693	1350.85	2160.32	2281.81
Lunenburg. .	Bridgewater	Sept.25–27. . .	Jas.A.Curll.	1868.15	2159	1064.80	4728.77	5653.10
Pictou.	Pictou.	Sept.29,30, Oct.1.	D.Logan.	1490.45	2450	1591.00	3268.73	2588.28
Queens.	Caledonia. . .	Sep.29,30. . . .	Josiah Smith. . . .	499.30	976	501.50	1148.69	973.91
Shelburne. . .	Shelburne. . .	Oct.8,9.	H.H.West.	311.75	. . . .	455.70	825.40	816.41
Yarmouth. . .	Yarmouth. . .	Oct.1,2,3. . . .	Wm.Corning. . . .	1853.73	1899	1950.00	5979.33	4771 15

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to submit my fourth annual report in connection with the Government Ditching Machine

The machine was housed in Wolfville during the winter and as soon as the land was fit in Spring went to work on the farm of J. D. Sherwood, where 261 rods were excavated.

On completion of this job there were a number of farmers in the vicinity who wanted work done but were unable to secure tiles.

The machine was then brought to Truro and operated on some newly acquired property with the College Farm. Here, with the use of the machine, 1275 rods of tile drains were laid.

The machine then returned to Wolfville to complete the work previously commenced for Sir Frederick Borden, and here 714 rods were dug.

It was then brought to Clifton to do some work for Mr. C. A. Archibald. Owing to bad weather and stoney land only a small portion of this work was done.

The total number of rods excavated was 2450, which may seem a small amount, but it must be remembered that the machine has, for the most part, had difficult work to do and has lost time in making minor repairs.

Furthermore, during midsummer, the best time to operate the machine, farmers are so busy with other work that they cannot attend to extra work. Under ordinary conditions and continuous work the machine is capable of accomplishing a great deal more work. In fact, under favorable conditions more than 100 rods of three feet ditch has been excavated in ten hours.

The importance and necessity of drainage is becoming more apparent each year; the use of the ditching machine has partly solved the problem, but until farmers can procure tiles regularly and at a lower price, those wishing to underdrain their farms will be seriously handicapped.

Respectfully submitted,

F. L. FULLER.

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to submit my fourth annual report of the County Farmers' Associations.

The Associations now number twelve, Richmond having dropped out during the year.

The total membership is 1919, which is 342 less than last year. The number of meetings held was 207, which was 17 more than last year. The total attendance was 6797, which was 1440 less than last year. The average was 33.

The number of meetings held in unorganized counties and not reported under the head of County Associations was 63, attendance 3215, average attendance 15. This makes a total attendance of 10,002, and an average attendance of 40. In addition, Prof. Cumming addressed large audiences at excursions, picnics and exhibitions, many of the latter being officially opened by him.

It will be noted by referring to the tabulated reports on the following pages that, while the membership has slightly decreased and the number of meetings held under the auspices of Farmers' Associations are somewhat less than last year, that the number of meetings held in unorganized counties has considerably increased, thus making the total number of meetings just about the same as during the previous year.

In addition to the meetings thus reported there were quite a number of meetings held by Farmers' Clubs, at which agricultural matters were taken up and discussed by the local farmers. Although these meetings are not reported, they are a vast influence for good, and deserve every encouragement.

During the year two ploughing matches were again held in Pictou County. From the success of those held the previous year the Department of Agriculture felt that it would be money wisely expended to assist these ploughing matches and consequently a sum of $50.00 is available to any Association which conducts a ploughing match at which reasonable prizes are offered in the proper classes. The matches held this year—one at Lower Barney's River, and the other at River John—were both wonderfully successful. The weather was fine and was estimated that not less than 1500 people were present on each occasion. Addresses were delivered by prominent men and tea served by the ladies of the community. Everybody went home feeling that the cause of Agriculture had received another well-deserved boost.

The following is a tabulated report of the Associations in each County, giving (1) names of chief officers, (2) total membership, (3) number of meetings, (4) total attendance, (5) average attendance, (6) total receipts, (7) total expenditure, (8) balance on hand.

All of which is respectfully submitted.

F. L. FULLER.

COUNTY ASSOCIATIONS.

COUNTY	Number of Members	Number of Meetings	Total Attendance	Average	Total Receipts	Total Expenditure	Balance
Annapolis							
President, R. S. Leonard, Paradise; Vice-President, R. J. Messenger, Lawrencetown; Secy-Treasurer, L. W. Elliot, Clarence....	152	25	767	30	$107 80	$73 83	$33 97
Antigonish							
President, A. S McMillan, Upper South River; Vice-President, Dr. Hugh McPherson, St. F X. College, Antigonish; Secy-Treasurer, Allan McDonald, Antigonish..	40	3	328	109	1491 41	1262 30	229 11
Cape Breton							
President, H. A. Moffatt, North Sydney; Vice-President, A. R. Richardson, South Bar; Secy-Treasurer, R. M. Jackson, Jackville..............................	253	15	380	25	531 61	270 30	261 31

Cumberland							
President, Samuel Freeman, Amherst Vice-President, C. E.Davison, Halfway River; Secy-Treasurer, C. H. Black, Amherst...	108	21	645	30	113 33	102 60	10 73
Digby							
President, W. A. Bacon, Acaciaville; Vice-President, Heber C. McNeil, North Range; Secy-Treasurer, F. W. Nichols, Digby....	233	20	612	30	260 33	222 39	37 94
Hants							
President, S. P. Schurman, Mt. Denson; Vice-President, J. A. Scott, St. Croix; Secy-Treasurer, H. B. Planchard, Ellershouse...	102	12	305	25	131 37	78 47	52 90
Inverness							
President, D. F. McLean, Port Hood; Vice-President, Jas. Gillis, Southwest Mabou; Secy-Treasurer, A. J. Campbell, Alexander.	192	18	270	15	171 88	154 72	17 16
Kings							
President, R. L. Palmer, Welsford; Vice-President, L. D. Robinson, Berwick; Secy-Treasurer, W. H. Woodworth, Berwick...	125	27	920	30	243 64	161 96	81 68

COUNTY ASSOCIATIONS—*Continued.*

COUNTY	Number of Members	Number of Meetings	Total Attendance	Average	Total Receipts	Total Expenditure	Balance
Lunenburg							
President, Wallace Rodenhizer, Bridgewater; Vice-President, A. E. L. Fritze, Lunenburg; Secy-Treasurer, J. L. DeLong, Barss' Cor.	222	14	856	61	210 66	209 81	85
Pictou							
President, Daniel McDonald, Sylvester; Vice-President, Wm. Murray, Union Centre; Secy-Treasurer, Chas. A. Maxwell, Mt Thom.	205	27	679	25	175 77	113 95	61 95
Queens							
President, Z. F. Minard, Harmony Mills; Vice-President, H. L. Daley, North Brookfield; Secy-Treasurer, M. U. Freeman, Kempt.	60	14	350	25	167 25	86 00	81 25

Yarmouth President, Walter Churchill, Lakeside; Vice-President, Chas. H. Doane, Yarmouth Secy-Treasurer, S. P. Goudey, Yarmouth.	227	14	685	50	123 61	110 35	13 26

PART II.

GARDENING IN NOVA SCOTIA.

INTRODUCTION.

The object of this part of the Report of the Secretary for Agriculture is to place within the reach of all who may desire it some information about gardening. The growth of urban population in Nova Scotia and the increasing cost of living have, no doubt, tended to turn the attention of many to gardening as a source of profit and of heathful outdoor occupation. The growing interest in the raising of vegetables is reflected in the increasing number of inquiries received of late at the Agricultural College. It is partly to meet this demand for information that the matter of this report has been prepared.

Nearly all the vegetables of the temperate zone can be successfully raised in Nova Scotia. A few of the more common kinds which are of easiest culture are quite generally grown, but except for these the quantity of vegetables grown is much less than it might profitably be, and the variety far less extensive. Field crops of potatoes and turnips furnish the main supply of vegetables for many families throughout the year. These are easily cultivated and are kept in storage without difficulty. They are nearly always available as food for farm animals. It is because of these facts and the consequent cheapness of these vegetables that their use is so general. Of the other vegetables grown and used in Nova Scotia cabbage would, perhaps, come next to potatoes and turnips in quantity and value. Carrots, parsnips, beets, onions, peas, beans, lettuce, cucumbers and tomatoes are common in most gardens, while asparagus, spinach, salsify, cauliflower, kohl rabi and Swiss chard are sufficiently grown to show that they would succeed here.

It would be better for our people from the point of view of health and economy if a larger quantity and greater variety of vegetables were grown and consumed. Even those who grow quite a variety do not usually have them as continuously throughout the year as they might. Many persons think that they have done their duty when they have made one planting of such crops as peas, beans and corn, while the season for use of these and other vegetables could be lengthened very much by successional plantings, by canning and by proper storage.

While the market gardeners now grow much of the produce sold in the province, there is a steadily increasing demand for many vegetables which are at present being supplied from outside sources. Such crops as tomatoes and cucumbers when grown under glass, early cabbage and cauliflower, late celery kept in proper storage, sell readily at good prices.

The marketing of vegetables grown in Nova Scotia would be greatly facilitated if they were offered in larger quantities and a more continuous supply provided. Wholesale dealers are often compelled to import vegetables from outside the province in order, at times, to obtain the quantities and the steady supply which their trade demands. At the same time the person who grows this kind of produce here, but only in small quantities, may find it difficult to dispose of his goods because he has not the quantity sufficient to attract the wholesale merchant.

The formation of co-operative associations for the marketing of vegetables would afford an excellent means of bringing together the small lots of produce belonging to individual growers and obtaining for the members the advantages arising from offering such produce in larger quantities. Business managers could be appointed to look after the marketing of the produce and the members' time could be devoted exclusively to the growing of crops. That such a plan is feasible, has been proven by many such organizations of vegetable growers in the United States and of the apple growers of our own province.

In the farmers' home garden, much more might be grown for home consumption. Many farmers have no vegetable garden at all. They content themselves with either potatoes and turnips for the vegetable diet or buy what they want for home use. This is one of the mistakes of farm life, for one of the attractions of any home is the table. In towns and cities, there is usually an abundant supply of all kinds of vegetables within the reach of those able to buy them. The effect of this is to add one more attraction to the many which tend to draw the people from the country to the city. On the other hand, a supply of vegetables from the home garden has decided advantages over that obtained from the market in the city. In the first place the vegetables are fresh. Anyone who has ever compared the taste of vegetables fresh from the garden with the taste of those which have been gathered for a day or two, or even for a few hours can appreciate the difference. In the second place there is a real pleasure in gardening and in using the products from one's own garden. There is a perennial interest in planting and watching the development of the various forms of plant life.

The absence of a vegetable garden from many homes is often due to the notion that it is too much trouble or that there is not time enough for this sort of work. The true explanation, however, is that there is not a proper appreciation of the value of a supply of fresh vegetables, perhaps a lack of fondness for many of them and no conception of the pleasures of gardening.

Some of the vegetables with which a family should be supplied from the home garden throughout the year are: rhubarb, asparagus, radish and lettuce in May and June; early potatoes, green peas, bunch beets, carrots and onions in July and August; string beans, cucumbers and ripe tomatoes in August and September; cauliflower, cabbage and celery from September to midwinter; while the root crops, carrots, parsnips, beets, turnips and salsify should be available in good storage throughout the winter and early spring. The seeds of most of these vegetables would be sown out of doors, and the crops could be grown without the use even of a hotbed. With a hotbed the season for many of these could be lengthened by several weeks and mushrooms might be grown in the spent manure. A table furnished with the above named vegetables throughout the year would certainly present a greater attraction than one provided with the ordinary articles of diet. The consumption of meat would also be lessened to the advantage of the family both in health and economy.

Every home, whether in the town or country, should have its vegetable garden, nor is it necessary that this should be a large one. A large amount of vegetables can be grown on even a small area. Half an acre devoted to a kitchen garden may easily yield one hundred dollars worth of produce a year. The garden may be a source of interest, pleasure, health and profit to the owner. Out of door employment with plenty of garden produce as a part of the diet conduces to health, while the supply of fresh vegetables at less cost than they can be bought in the market decreases the cost of living.

Some persons who are very fond of vegetables endeavor to have as many as five kinds for dinner each day. Possibly the majority of housewives would think that the cooking and serving of this number each day would entail too much work. But a table furnished with even two or three kinds, with suitable variations, would be preferable to the monotonous diet of potatoes and turnips throughout the year, even though they are accompanied by a superabundance of meats.

Fondness for vegetables is often a matter of habit. Some persons like only a few kinds. They may never have cultivated a taste for other kinds or perhaps have never even tried them. When these persons were young a variety of vegetables was not a part of their regular diet and so with many of them, they never became well acquainted. On the other hand persons who are familiar with asparagus, cauliflower, salsify, spinach and such dishes, properly prepared, are not likely to be satisfied with a diet in which potatoes and turnips are the only vegetables that appear.

It often happens that certain vegetables are disappointing as articles of food because of improper cooking. It makes a great difference not only with the palatability of most vegetables but also with their digestibility and nutritive value whether they have been cooked in the right way or not. Even potatoes often lose, through improper methods of cooking, much of the attractiveness that they should possess and their digestibility and food value are often greatly impaired.

The best hotels now serve a variety of vegetables, some of which are not common articles of food. Some of these hotels even operate farms of their own and thus obtain their vegetables in the freshest condition. A demand for different kinds of vegetables is thus created and as the growers undertake to supply this demand and offer their surplus produce in the general market, people become better acquainted with new kinds and in time these vegetables will be in common use as a part of the regular diet of the people.

Dr. Arnold Lorand of Carlsbad, Austria has recently published two interesting books on the important subjects of Old Age Deferred and Health Through Rational Diet. While decidedly opposed to a purely vegetarian diet for the majority of people, Dr. Lorand points out the value of vegetables as articles of food and recommends their general use. The following are a few quotations from these works:

"Man and beast are what they are made by their food, and, therefore, we are able, by a deliberate choice of our food, to influence our minds and bodies in the most favorable manner for the accomplishment of our best achievements. To bring about this result is the main object of our use of food.

"While the nations living principally upon rice and other foods equally poor in nitrogen are lacking in energy and initiative, they possess another characteristic in which they surpass other nations, viz., their untiring capacity for work.

"Another advantage of a diet largely vegetarian lies in the fact that nervousness is, in general, less prevalent among people living upon such food than in those who are meat-eaters.

"A meat diet, owing to the nature of the end-products formed, imposes heavier work upon the kidneys than does a diet of vegetables or one consisting principally of milk.

"It is a great drawback that, owing to the unskillful cooking of vegetables—it is more than unskillful; it is actually criminal—and especially through allowing them to stand for a long time in tepid water, a very considerable amount of the nutritive salts is lost; they are simply soaked out.

"Bunge and Abderhalden have shown that animals receiving a food poor in iron become very anemic; when they are given a diet rich in iron, e. g., cabbage, carrots and various greens, the iron-content in the blood is increased.

"In addition to the exceedingly rich and valuable nutritive content of the leguminous vegetables, there are also present in them quite considerable amounts of important nutritive salts,—above all, a great deal of potash and phosphorus, and in comparison with other vegetables, also much lime.

"In fatiguing brain and nerve actions, more phosphorus should be given and some lime too.

"For healthy persons the leguminous vegetables form the best vegetable diet.

"In addition to its great nutritive value, corn contains certain valuable salts, such as phosphorus, and also appreciable quantities of iron.

"Certain fungi, i. e., edible mushrooms, which are quite unique in their nature, form a wonderful food. These fungi are very nutritious and one may readily understand why mushrooms are considered by some as vegetable meats, and why a French author called them game without feet.

"Head salad contains much lime, about 37.63 per cent. in the pure ash, and also much iron—5.31 per cent. Owing to their high content in alkaline salts, green vegetables exert a considerable influence upon the composition of the blood which they alkalinize.

"When well prepared and properly cooked, green vegetables may often be very useful as remedial herbs. We have already shown that they increase the alkalinity of the blood; in this way affections like gout and diabetes, in which there is acidity of the blood, may be much benefited. We might add that, as remedial agents, vegetables—in addition to this important increase of alkalinity—exert, owing to their cellulose, a very favorable action upon the intestines, thus preventing or benefiting constipation, the majority also have more or less favorable effect upon diuresis and some contain substances which stimulate the digestion. In this way they exert more of a curative action than almost any other food substance. In the diet of diabetic, gouty patients, and those suffering from arteriosclerosis, green vegetables occupy first place.

"We have thus seen that a vegetarian diet can give the best results, not only in the prevention and cure of many diseases but also in the preservation of health in old age."

Advice to Brain Workers.

"In so far as the diet is concerned it is strongly to be recommended during heavy mental labor, especially when much thinking is required, that meat-eating be given up and a vegetarian diet, with the addition of milk products and eggs adopted. At any rate, a diet rich in meats must be avoided; it not only makes one dull and heavy; but also creates a want for alcohol, coffee, tobacco and other unwholesome stimulants for which a diet containing little or no meat need awake no desire."

"A mineral of great importance is iron, which is contained in pig's blood to the largest extent, and in certain vegetables and fruit in considerable quantities. Vegetables and fruit are also rich in vegetable acid, and also contain a large amount of cellulose, which plays an important role in the normal evacuation of the bowels, being the most natural stimulus for this purpose.

"Vegetables and fruits have thus very great advantages and even in winter our daily diet should consist plentifully of them.

"With vegetarian diet we can avoid, in great probability, those diseases which arise from our excessive formation of uric acid.

"To prevent the development of diabetes, especially in cases of children of diabetic parents, a vegetarian diet can be of great use.

"Obesity is seldom found in persons who live on a vegetarian diet.

"Arteriosclerosis is very seldom found in persons who have been addicted for many years to vegetarianism. Not only is this due to the fact that a vegetarian diet is the least deleterious to the circulatory system, but the viscosity of the blood is also diminished; but, with a vegetarian diet, coupled with milk, there is much less intestinal putrification, if any, than with a meat diet.

"Vegetarian diet is of great service to the intestines, their torpidity thereby being greatly overcome, and if milk be taken at the same time intestinal putrification is checked and the tendency to catarrh improved.

"Such a diet is of great importance to other important organs, the thyroid, liver, and kidneys; as in cases where such are in a diseased condition, the chances of recovery or for a more prolonged life are much enhanced because such a diet is least harmful to these organs."

In the preparation of this report, I have had help from a number of persons both in the way of suggestions and contribution of articles. Some of these friends were former residents of Great Britain and were engaged in gardening before coming to this country. They are well acquainted with the methods practised in the culture of vegetables in the Old Country where this kind of work has been carried on for so long a time with success. The others who assisted are successful gardeners or farmers of this province or connected with horticultural and scientific work here and elsewhere. They are all quite familiar with the conditions in Nova Scotia. For the valuable assistance rendered, I wish to extend to them all my sincere thanks.

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Part of the truck garden at the Agricultural College, Truro, N. S.

Partial view of frame yard at the Horticultural Building, Agricultural College
Truro, N S.

THE SOIL AND ITS PREPARATION.

The best soil for vegetable garden crops is a sandy loam. Such a soil is early and easily worked. It can be handled readily after rains and at almost any time of the year. It responds quickly to the use of fertilizers. Since it warms up quickly in the spring, plant growth on it is quick and early, two important considerations in the growing of good vegetables. Clay soils are usually richer in plant food and more retentive of moisture than sandy soils, but they are not as early or as easily handled. They are better suited to the growing of main season crops where earliness is not required. Clay soils may be improved for garden purposes by underdraining and by the addition of humus. Sandy soils may be improved by the addition of humus and plant food. Reclaimed swamps or muck soils are excellent for the growth of certain crops, such as celery, onions and asparagus, provided they are sufficiently drained and freed of any acidity.

The preparation of soils for gardening is effected by tillage, by the addition of humus and fertilizer and sometimes by subsoiling and underdraining. Unless arable land is kept loose and open by proper tillage it tends to become hard and unfit for the growth of most cultivated garden crops. Not only do crops fail to thrive on soils in this condition, but they are difficult to plant and unpleasant to cultivate. The object of plowing is to break and loosen the ground and to begin the process of pulverization. The harrowing and rolling continue this process and carry the pulverizing to a finer degree. The cultivation which follows maintains this state of tilth.

For a piece of greensward which is to be made ready for a garden crop the following treatment is recommended. Sometime during the year preceding (preferably not later than August) plow the ground shallow. Roll, and if necessary, allow it to stand a few days to dry. Harrow and sow to some green crop, such as oats and peas, or oats, peas and vetches. The same fall this crop should be turned under, cross plowing the land and going a little deeper than before. Leave it thrown up rough through the winter. In the spring apply rotted manure and harrow well, using the disk or spring tooth. Plow again, this time shallow. In case a piece of greensward has been left until late in the fall before the preparation begins, the following treatment is recommended: Plow the ground deep in the fall. Apply manure and harrow well, using the disk and spike tooth. Sow winter rye to be plowed under shallow in the spring. Such land the first year would be used for main season crops such as beets, turnips, cabbage or corn.

Land that has been in garden crops, or stubble land, should be harrowed well in the fall with disk or spring tooth. It should then be plowed an inch or two deeper than before and left thrown up rough for winter. In the spring apply rotted manure, disk and allow to stand a few days to warm up and dry out if necessary. Then plow again, this time shallow. Harrow with spike tooth or chain harrow and roll lightly. If the land is light, sow the seed after rolling. If not, harrow after rolling with the spike tooth, and then sow the seed.

It is important that the whole work of preparation of the soil be thoroughly done. The plowing, harrowing, rolling and raking, if necessary, should leave the ground in the best of tilth, that is, fine and mellow to as great a depth as possible. Old country gardeners accomplish this result by what is called trenching, that is by spading the ground to a depth of 2 or 3 feet or more, incorporating manures and fertilizers into the soil at the same time. In this country such loosening of the soil is effected by means of the plow and sometimes the subsoil plow. The result of the preparatory tillage is to make a good seed bed to receive the seed and allow the young seedlings to come up. The after tillage is much easier on account of this and aims merely to maintain this state of tilth and conserve the moisture.

MANURES AND FERTILIZERS FOR GARDENS.

The gardener's practice in the use of manures and fertilizers differs from the farmer's in two important respects. Gardeners generally use these materials in much larger quantities per acre than do farmers and whenever possible they require the manure to be well rotted, or what is called "short." While twenty-five tons or less of manure per acre may be sufficient for many farm crops, it is not unusual with gardeners to use two or three times this amount. This practice, which would appear to an ordinary farmer as extravagant, is justified by the fact that the value per acre of the gardener's crop is often many times that of the farmer's. For example,—a crop of hay, oats or turnips might turn from $30 to $200 per acre, while garden crops may go from $50 to $1200 per acre. Again, the gardener usually requires quick and continuous growth so that his crops will be early and of the best quality. To obtain these results it is necessary to use manures and fertilizers in large quantities. Peter Henderson relates the experience of a gardener who, because part of his land was to be made into a street the next year, witheld manure from it that season. The land on both sides was manured as usual at the rate of a ton of guano per acre. Although the whole of this land had been well fertilized in preceding years, the returns from the part unfertilized that year were fully $1000 an acre less than those from the fertilized portion. By witholding $60 worth of fertilizer the owner lost $1000 per acre on one crop.

Fresh stable manure in large quantities is unsuited for immediate use in the growth of most garden crops. It may cause an excessive growth of stem or vine at the expense of fruit, or delay the maturing of some kinds of vegetables, or cause the development of coarse, rough roots in the root crops.

If manure is to be applied to the land the same season that the crop is grown, it should be well rotted. Rotted manure is preferable to fresh manure; 1st, because it mixes more readily with the soil and does not interfere with the operations of tillage; 2nd, because it does not hold the soil open and allow it to dry out; 3rd, because its plant food is more readily available than that in fresh manure.

Many gardeners like to compost the manure for a period of six months before using. The manure is placed in long, low, flat piles in the field to catch and absorb the rain, but deep enough so that the water will not run through to the ground. These piles are forked over and tramped down two or three times during the season, to pulverize the manure and aid in its decomposition. When thoroughly rotted and short it is applied in liberal quantities to the ordinary market garden crops.

If the manure which is to be composted consists largely of straw and other litter a good method is to throw it into a manure pit or cellar and allow pigs to tramp on it and work it over. Any refuse material from the garden, free from insect pests and fungous diseases, may also be thrown in to the pigs. After the manure has become well moistened and worked over, it should be taken from the pit and composted outside as above mentioned, but for a much shorter time. By this method the dry strawy manure has greatly increased in value from the gardener's standpoint.

Some successful market gardeners in this province depend altogether on the use of stable manure for maintaining the fertility of their land. These men are usually conveniently situated with reference to a cheap and abundant supply. In some instances they have been able to obtain the manure from livery stables at as low a price as 25 cents a two-horse load at the stable.

These market gardeners who can obtain stable manure so cheaply have not yet felt the necessity of using commercial fertilizers in their garden operations, yet where stable manure sells at the usual market rate it would be more economical to supplement the manure with some form of concentrated commercial fertilizer. The use of manure alone to supply the ingredients of fertility may be wasteful. It is not a balanced fertilizer and when a sufficient amount is applied to supply the necessary ingredients of one kind (mineral) there is an excess and a waste of the ingredients of another kind (nitrogen). A second advantage in the use of commercial fertilizers in gardening is that their ready availability causes an earlier and more rapid growth. Earlier growth means earlier maturity and larger prices. Rapid growth gives better quality. The supply of stable manure is usually limited. By supplementing the manure with proper commercial fertilizers just as good, if not better yields can be obtained and a larger area cultivated.

The elements of plant growth which are likely to be deficient in most soils are nitrogen, phosphorus and potassium. As materials of the soil which the plant takes up, these are in the form of chemical compounds, as nitrates, phosphates and salts of potassium. In these forms they are commonly spoken of as nitrogen, phosphoric acid and potash. The commercial fertilizers offered on the market are either complete fertilizers containing all of these three ingredients, and in about the proportions likely to be needed by the plant, or incomplete fertilizers, sometimes called high grade chemicals, containing only one or two of these ingredients and usually in much larger quantities than in the complete forms. Examples of high grade chemicals are nitrate of soda and sulphate of ammonia as sources of nitrogen, acid phosphate and basic slag as sources of phosphoric acid and muriate and sulphate of potash as sources of potash. (For a full discussion of the subject of fertilizers see Annual Report of Secretary for Agriculture, 1909, on Soils, Soil Cultivation and Crops, by M. Cumming.)

If a person wishes merely to enrich his soil without going to the trouble of finding out which ingredients of fertility are most needed and which are not needed at all, he can safely depend on the use of complete fertilizers alone. But since soils vary greatly in chemical composition such a practice is likely at times to be wasteful. It would be more economical to find out, if possible, what elements are most needed and to supply these in the form of high grade chemicals. The best way to obtain this information is not necessarily by a chemical analysis of the soil, but by trying different kinds of fertilizers on the crop using check rows or plots between to see the difference in results. (See Annual Report of Secretary for Agriculture, Part II, on Soils, Soil Cultivation and Crops, 1909, page 101.)

If a person is using high grade fertilizer on vegetable garden crops from half a ton to a ton or even a ton and a half, depending on the crop and soil, may be used. Some growers would prefer to put on half of this amount in the form of complete fertilizer and to supplement it with later applications of high grade chemicals, the kind depending on the requirements of the crop and soil. For instance, in using a complete fertilizer analyzing 4 per cent nitrogen, 8 per cent phosphoric acid and 10 per cent potash, one might apply from 1500 lbs. to 2000 lbs. of this mixture per acre for potatoes along with manure or a clover sod plowed under. Five or six hundred pounds of the same fertilizer might be used for peas or beans, supplemented by 200 to 300 lbs. acid phosphate and 150 to 200 lbs. of potash; or 1000 to 1500 lbs. of this mixed fertilizer might be used per acre for beets and turnips supplemented by 50 to 100 lbs. of nitrate of soda in two or three applications after the plants had come up. Many persons would prefer to use the separate chemicals in place of the complete fertilizer, each containing one or more plant foods, and in such a case 500 lbs. of nitrate, 800 to 1000 lbs. of acid phosphate and 400 lbs. of muriate or sulphate of potash might be used.

The best time to apply most fertilizers is after the first harrowing when fitting the land for the crop. On account of its extreme solubility and danger of leaching from the soil it is better not to apply nitrate of soda too long in advance of the needs of the crop. For the same reason where this fertilizer is being used in large quantities it is advisable to apply only a portion at first, following this with later applications as the crop develops.

HOTBEDS AND COLD FRAMES.

With our cold backward springs and sometimes early fall frost the part of the year when we can get many vegetables fresh from the garden is very short. The period of growth for these crops, and hence the length of time during which they may be available from the garden, may be greatly extended by the use of hotbeds and cold frames. A cold frame is a box-like structure without a bottom surrounding a bed of earth and covered with glass or other transparent material, such as cotton. It is used as a place in which to grow plants when the weather conditions outside are unfavorable. When the bed of earth within the frame is heated by fermenting manure or otherwise, the cold frame becomes a hotbed. The glass or transparent material, used as a cover, is usually contained in 3 by 6 feet sashes. A single frame, which is generally covered by four such sashes, is 6 by 12 feet. It may, however, be any convenient size, and ordinary windows from a building, such as storm windows from a dwelling, may be used as temporary covers in the spring months.

Frames for hotbeds or cold frames may be made either of inch board or two-inch plank. The front is made 6 to 12 inches high and the back 12 to 18 inches. The sides slope from the back to the front. The frame is placed facing or sloping to the south. The slope allows the rain to run off and catches the sun's rays.

A cold frame may be used in which to plant and grow to edible size such crops as beets, carrots, radish and lettuce. By starting these in March and April they may be had for table use in May and June, several weeks ahead of those sown in the garden, or the cold frame may be used to receive and protect tender plants such as tomatoes after they have been grown for a time in the hotbed or glass house. In the cold frame, with the cover removed part of each day, they are exposed to outdoor conditions and become properly hardened for planting out in the garden.

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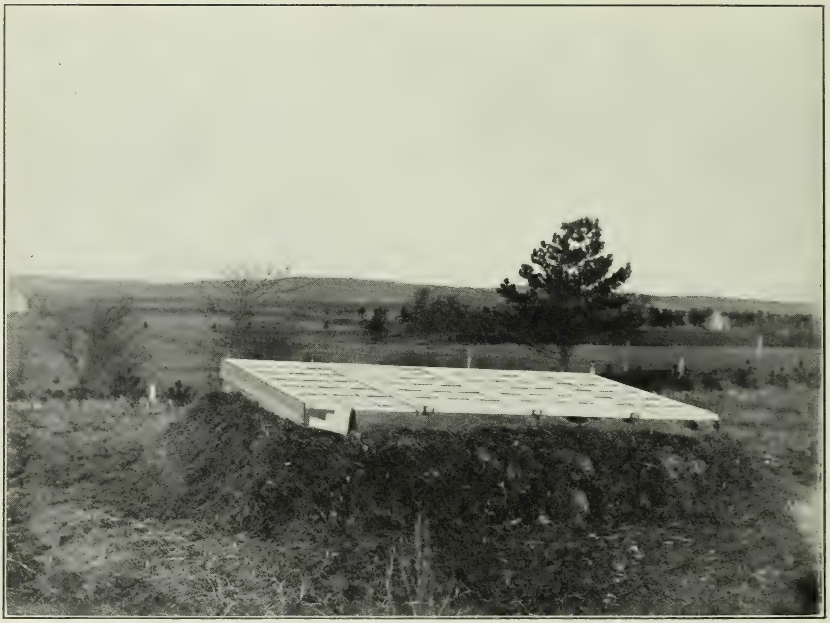


A hotbed built on a manure pile.

A hotbed is used for starting plants early in the spring, generally before danger of freezing weather is past. It is protected by the frame and sash and warmed usually by fermenting horse manure or other material. Sometimes fire heated flues or steam or hot water pipes are used to furnish the heat but in this country horse manure is by far the cheapest and most common source of heat.

The hotbed may be made either on top of the ground, or in a pit two feet deep or more. Where the ground is cold and wet and the hotbed only temporary it is better to make it on top of the ground. The frame is placed on top of a pile of heating manure which has been leveled off and well tramped down. The manure should extend about a foot further in each direction than the frame. Four or five inches of specially prepared soil should now be put in the frame, and it is ready for sowing. The edges of the manure pile outside of the frame should also be covered with a few inches of earth to prevent loss of heat.

In warm, well drained soil, permanent hotbeds should be made over pits. This method of construction is more economical of heat than when the body of manure is exposed to the wind. An excavation should be made to a depth of two feet or more. The greater depth is useful when the hotbeds are started early in the season in zero weather and when a longer period of heating is required.

MANURE FOR HOTBEDS.

The best manure for hotbeds is horse manure. This should be fresh and unfermented and of as nearly the same age as possible. Manure from horses well fed on a grain ration is the best. This manure should consist of one-third straw or other litter. It should be moist, neither very wet nor very dry. Manure should be springy when stepped on, neither fluffy nor soggy as when it contains too much or too little litter. Sometimes manure is put in a pile under cover for a week or ten days to start the process of fermentation. It is forked over at intervals of a few days and thoroughly mixed in order to start the whole mass heating uniformly. When the fermenting process has well begun, it is ready for the hotbed. In our practice with hotbeds started in March or April, however, we have found it quite satisfactory to put the manure into the hotbed right from the stable, without any previous treatment to start fermentation. A layer of straw or leaves should first be placed on the bottom of the bed to keep the manure from losing heat to the ground beneath. The manure should be added in layers of about one foot in depth, each layer being thoroughly tramped until the pit is filled to the bottom of the frame. The soil should now be placed on to the depth of 4 to 5 inches. This soil should have been prepared the fall before and stored somewhere under cover as in a shed or cellar. It is best made of rotted sods and rotted manure in the proportion of three parts of the former to one part of the latter. A sprinkling of sharp sand may be added and the whole thoroughly mixed and passed through a sieve of quarter inch mesh. If rotted sods are not available, rich garden loam and sand in equal parts put through a sieve will answer. When the temperature falls below 90 degrees as indicated by a thermometer, seeds of such plants as tomatoes may be sown and when it goes below 80 degrees seeds of plants liking cool conditions such as cabbage may be sown. It is important to do the sowing on a falling temperature to avoid the danger of burning the plants.

The tendency now is to sow the seeds in flats and place these in the hotbed on a shallow layer of soil or cinders two inches or so in depth. This makes it more convenient to sow the seeds and handle the plants. Care should be exercised in watering the hotbed not to apply too much water at any time, as this injures the texture of the soil and is detrimental to the growth of the plant. It is best to have the water at a temperature of about 60 degrees Fahrenheit. The best time to water is in the early part or middle of the day and not on a falling temperature.

Hotbeds should be ventilated so that the plants will grow stocky and healthy; otherwise they are apt to be spindling and soft and attacked by disease. Ventilation is necessary to regulate the temperature and to dry the air. The temperature should be kept between fifty and seventy degrees F. according to the plant. When the air of the hotbed is saturated with moisture, beads of water collect on the under side of the glass. Under such conditions the sash should be partly removed in the middle of the day if the weather conditions will allow. This may be done by pulling down and pushing up alternate sashes or by raising one end of the sash if the hotbeds are not exposed to strong winds. Always ventilate away from the wind.

When the plants have developed their first true leaves they should receive their first transplanting, or pricking out as it is called, into other hotbeds or cold frames where there is more room. Here they are exposed to outdoor conditions and gradually hardened off. From these hotbeds they are transplanted directly to the garden.

TRANSPLANTING.

Plants are transplanted, first, so that better conditions can be provided for the germination of delicate seeds and the growth of seedlings, second, to make the crop mature earlier.

It is important in transplanting to have good plants. These should have made a continuous growth. They should be stocky, healthy, hardy and of the right age. The soil should be well prepared so that it will be fine, mellow, moist and rich. The transplanting should be done preferably on a dull day, before a rain, or in the afternoon. The plants should be taken up with a ball of earth and with as little disturbance of the roots as possible. They should be planted in moist earth, as deep or a little deeper than they were before. The earth should be well firmed about the roots and a little loose earth drawn over this. If the plants are to be watered it should be done before putting on the loose earth and sufficient water should be applied to reach the root. As soon as the transplanting is done, the whole should receive a thorough cultivation in order to loosen the soil and conserve moisture by restoring the surface mulch. Some plants, such as the tomato, are benefited by an application of nitrate of soda in the hill at this stage.

DOUBLE CROPPING.

Garden land is often expensive. For the best results in quick growth and good quality of crops it is always necessary to go to much expense in the preparation of the land in respect to tillage, manure and fertilizers. The materials of plant growth are always provided far in excess of the needs of a single crop. These facts lead gardeners to resort to different methods to get the maximum returns from their land. One of these methods is what is called double cropping, or the growing of two or more crops on a piece of land in one year. If the two crops occupy the land at the same time we have what is called companion cropping. If one follows the other we have succession cropping.

Examples of companion cropping are when radish, lettuce, spinach, early beets or bunch onions are grown between the rows of peas, cabbage or cauliflower. Another good example is when radish is sown in the same row with carrots to mark the row and break the crust for the young carrot seedlings.

We have examples of succession cropping when land which has been in strawberries, early potatoes or lettuce has been made ready the same season and planted to cabbage, late celery or tomatoes. Owing to our short seasons, succession cropping is not nearly so practicable here as companion cropping.

In companion cropping one crop should be of much shorter season than the other. The two crops should be such that the tillage and other operations required for one would be suitable for the other.

ROTATION OF CROPS.

A rotation of crops is essential to the best success in general farming. One of the chief benefits from such a practice is that it is an economical way in which to maintain or increase the humus in the soil. With such a rotation as hoed crops, followed by grain and then hay, we have a grass or clover sod to turn under at intervals to add humus to the land. In the growing of garden crops there are two points of difference:—1st, the strictly garden crops include only one group of the above rotation, that is the hoed crops; 2nd, for most garden crops the best practice adds more humus annually than is consumed by the crop, hence, this reason for a rotation with farm crops—supplying humus—does not hold with garden crops So far as the plant food or humus in the soil is concerned there is no need for changing the crops on a piece of land, since with the ordinary garden practice these materials would actually increase in the soil, crops such as carrots and onions, having been grown year after year on the same land without any change and with increasing yields.

There are two reasons, however, why gardeners are sometimes compelled to adopt the practice of rotation of crops. One is the presence, at times, of insect pests and fungous diseases, and the other, the presence of a condition of the soil supposed to be due to toxic, or poisonous matters, which are thrown off by some plants, making it difficult to grow the same crops on the land year after year. When either or both of these conditions affect the crop, it is necessary to rotate. Sometimes it may be advisable to give up a certain crop for a time till an insect is starved out. A good plan would be to follow the root crops by those bearing their edible parts above ground such as tomatoes, corn, squash, etc., and these by the legumes, peas and beans.

Sometimes it is well to seed down a piece of garden land to clover or grass to give it a "rest" for a few years. When this is plowed up and put into garden crops again, the rotted sod restores the productiveness as nothing else can.

P. J. SHAW.

ASPARAGUS CULTURE.

By James Allan.

Asparagus officinalis (or Asparagrass as it is sometimes called) is a vegetable the value and importance of which hardly can be over estimated. Where a patch or bed is once started and properly cared for, it will produce good annual crops for ten or twenty years, and it is much to be regretted that it is not more extensively grown in Nova Scotia.

Asparagus is most generally propagated from the seed. Seed for sowing should be gathered from the best developed heads with heaviest stems. That which grows at the tips of the branches should be discarded as it is of an inferior quality, not being well developed.

The seed bed should be made in the open ground in well prepared soil. The drills should be about twelve inches apart and about half an inch deep, and the seed should be sown thinly. Being slow to germinate, it is well to sow some turnip or radish seed with it. This will appear in a few days showing the row plainly, when cultivation should at once begin and be continued through the season, being sure to keep all weeds down. The plants should be thinned out to a distance of three inches thus enabling them to develop a good strong growth before autumn.

The following spring the plants being one year old, should be dug up and sorted out ready for planting. Select those that have the heaviest and strongest looking shoots starting away from the crown in preference to those that will have a larger number of weaker shoots. In all probability these latter are female plants which do not produce as heavy stems as do the male or pollen bearing plants.

Some growers grow the plants for two years before planting out. In such a case if grown in good thrifty condition, one might be able to select the male plants, discarding all the others, as they will reduce the profit quite a little. The best varieties I know are Conover's Colossal, Palmetto, Argenteuil and Columbian Mammoth White.

This species of plants will live and thrive to some extent in almost any kind of soil. Sometimes an asparagus plant may be noticed along some neglected fence row throwing up strong stalks and stems, and apparently in good thrifty condition.

The best location I have always found to be a site facing with a gentle slope to the south or southeast. The soil should not be too heavy nor too light and good drainage is essential.

The plants like moisture, but for really good crops, the water level should not be nearer than three (3) feet from the surface.

The preparation of the soil is important. The plowing should be done deeply and if possible should be followed with the subsoil plow so as to have the soil stirred to the depth of 15 to 18 inches. Some growers of asparagus recommend a greater depth, but I do not see any necessity of that, as the asparagus plant is one that derives most of its plant food from near the surface. The ground being in a good state of tilth, manure should be most liberally applied as the asparagus is an exceedingly gross feeder. Therefore rotted manure, at the rate of 25 to 30 tons to the acre, should be thoroughly incorporated with the soil. This should be done in the fall and just before hard frost has made its appearance for the winter. It is an excellent idea to have the ground thrown up roughly as the frost of the winter has thus an opportunity to do its work more effectively.

Planting operations should proceed as early as it is possible to work on the ground in the following spring. For commercial or garden purposes we prefer to run the trenches north and south, opening them with a double mold board plow or with a spade, (the plow being the quicker) to the depth of 7 or 8 inches, while the rows should be four to five feet apart.

Plants should be set in the trenches about three feet apart. Taking the one year old plants as before mentioned, proceed to drop one at every three foot point. In planting, carefully spread out the roots of each individual plant; pull in some of the fine loose earth round the roots, packing it firmly. As the plants commence to grow, more earth should be pulled into the trench, while they are being cultivated through the summer with the hoes and horse cultivator, which should be done frequently to keep down weeds and conserve the moisture and by fall the ground will be well leveled up.

No cutting should be done until the third year and then only on extra strong plants, and very sparingly. The fourth year, cutting may be done in earnest; it should continue for about six weeks, or until the early peas come in. The plants should then be left to grow until fall. When they begin to turn yellow in the fall of the year, the plot or bed should be cut over with the scythe and the stalks removed; otherwise the seeds will drop off from the matured shoots and will grow all over the bed in the spring.

The bed or patch should receive every fall an application of well rotted (not fresh) manure to the depth of one or two inches. This will be washed down amongst the roots by the fall rains and the nourishment will be stored in the roots of the plants enabling them to throw up strong shoots the following spring.

The top dressing should be cultivated into the soil in the early spring. Some growers also give a top dressing of coarse salt in the spring before growth commences, but I am strongly of the opinion that the fertilizing power of salt has been over estimated; I have never seen any material advantage from its use on asparagus, except that it helps to keep down weeds and to conserve moisture in dry weather.

Asparagus for the market should be cut with a knife, the shoots being severed just below the surface of the ground. They should have attained a growth of about four inches, and care must be taken not to injure the younger shoots or the crown. When the bed is growing well it is wise to look it over every morning. To keep asparagus fresh and crisp let it stand in shallow pans in moist moss and be kept in a cool place.

The most troublesome enmies of the asparagus are the Asparagus Beetle and the Twelve Spotted Asparagus Beetle.

The most effective remedy is to dust the plants with a mixture of air slaked lime and paris green which will kill both the larvae and the leaf eating beetle.

BEANS AS A CROP TO GROW IN ORCHARDS.

By Rev. G. P. Raymond.

Beans may be profitably grown among young apple trees to lessen the cost of producing an orchard. The trees are most important and the beans, potatoes or other vegetables, grown on the same ground are secondary—only a means to an end. For increasing the value of land in the orchard sections of our Province there is nothing to equal apple trees of the right varieties. If beans are grown on land where no trees are planted the owner gets only the value of the annual crop of beans; but when they are grown with young trees there is the additional value of the annual growth of the orchard, the trees being fertilized and cultivated at practically no expense. Beans are leguminous and nitrogen gathering plants and therefore rather increase than decrease the fertility of the soil. They are also very little trouble in the autumn when all the help is needed for picking apples.

After a new plot of ground is stumped and broken up, it is best to grow potatoes among the newly planted trees for the first year—then plant beans till the trees begin to bear fruit. Even then beans may be grown for a few years on alternate lands, thus giving room for the spray cart and wagon on the other lands. Any soil that is suitable for growing orchard is good for growing beans but a sandy or gravelley loam is best. Cultivate the ground thoroughly before planting the beans. This lessens the trouble and cost of future cultivation. Select the seed carefully, choosing the large well formed beans of one variety only. The soldier bean is the safest variety to grow in the Annapolis Valley because it may be planted two weeks later and harvested two weeks earlier than the Imperial Yellow Eye, thus escaping the danger of the spring and autumn frosts. The price of these varieties is the same and many prefer the soldier bean for table use. After the land is thoroughly harrowed and the time has arrived for planting the beans—the last week of May or the first in June—use the weeder for making the land smooth. Use a Planet Jr. planter for sowing the beans and put them in rows or hills. By making the drill with the Planet Jr. Handplow and putting the seed in by hand in hills, about five beans to a hill, and the hills about twelve, or fifteen inches apart, a good opportunity is provided for hoeing. Some prefer to sow the beans in continuous row and run the cultivator so frequently that no hand hoeing is needed. If a large field is being planted the drills may be made with a horse and plow and the beans covered with a weeder run across the rows.

After the beans come up they should be cultivated after each rain—or at least every six days. A garden rake may be used to good advantage later in the season for breaking the crust. Do not hoe the earth up to the beans at any time; but keep the ground level so the pods will not be injured by contact with the soil. The kind and quantity of fertilizer to be used depends upon the age of the trees—for allowance must be made for their growth as well as the need of the beans. Generally about half as much potato fertilizer as would be used for a crop of potatoes will give good returns. When cultivating the beans for the last time, soon after the pods are well formed, sow winter vetch or rye in the rows and thus get a cover crop for holding snow and enriching the ground for the next season's crop. This plan is generally followed in Germany with many vegetables. Turnip seed might be profitably used instead of vetch, leaving the turnips to decay for the benefit of the soil.

Do not pull the beans until the leaves have fallen. Then watch the weather and when there is promise of two fine days in succession, pull the beans and turn them upside down in convenient sized bunches. Haul them in next day early after noon, so they will be dry and free from dew. They may be thrashed any time during the winter and there is always a market for them at from $3.00

to $4.00 per bushel. After they are gathered the frost will not hurt them; mice will not hurt them and they may be thrashed and winnowed at any convenient time without interferring with other work. The vines or pods will pay for the trouble of thrashing—as feed for cattle or sheep. If you have no stock to eat the pods, your neighbor will thrash and winnow them for the pods to feed to his cattle. Perhaps the best thing to be said in favor of bean culture is that they do not require to be sprayed. Any one who is busy all summer spraying for apple spot and potato bugs will enjoy having a plot of beans that he does not have to deluge with liquid poisons.

STRING BEANS.

"String beans represent one of the most desirable among the green vegetables for patients suffering from diabetes." (Dr. A. Lorand. Health Through Rational Diet, P. 267).

String beans make a valuable addition to the vegetable diet from August on. In this country the dwarf, or bush varieties are chiefly used although some people prefer the pole beans for quality.

Beans are tender, warm season plants. The early crops require a light, warm soil, such as a sandy loam. Since string beans are eaten pods and all, it is important that they make a quick growth, and be used young, so that they will be tender and free from strings. To have them grow quickly and without check, the land should be well prepared and well supplied with humus and available plant food. The soil should be fine, mellow and moist. It should contain a fair amount of humus in the form of rotted manure or rotted clover sod. Although the bean is a legume, getting some of its nitrogen from the air through the nodules on its roots, it is advisable to apply a quickly available form of this element, either in a complete fertilizer or as nitrate of soda, when preparing the land for the crop. Five or six hundred pounds per acre of a complete fertilizer containing a fair percentage of each of the fertilizing materials would be a good application. If one wishes to use the separate chemicals, 100 pounds of nitrate of soda, 400 pounds of acid phosphate and 100 pounds of muriate of potash have been found to give the best results at the Georgia Station.

Beans are usually planted in this province about the first week in June. When successional plantings are to be made for string beans the first one might be made a week or ten days earlier than this. If this planting escapes the frost, the crop will be earlier, if it is killed the ground can be re-planted for a later crop. The seed is planted about two inches deep, in rows 18 inches to 2 feet apart, according to the method of cultivation. The plants should be thinned to from four to six inches apart in the row. One pint of seed plants about 100 feet of drill, or one to one and a quarter bushels are sufficient for one acre.

Cultivation should begin as soon as the plants are above ground. It should be frequent enough to prevent the formation of a crust. This will conserve moisture and prevent the growth of weeds. Frequent cultivation promotes rapid growth and thus improves the quality of the crop.

Good varieties are Wardwell's Kidney wax, Davis' Kidney wax and Detroit wax among the wax podded varieties. Giant stringless green pod, Refugee or One Thousand to One, and Red Valentine are good varieties of the green pod class. The market here seems to favor the wax podded beans to the exclusion of the green podded ones, although the latter are thought by some to be of better quality.

Pole beans require a fairly rich soil and should be planted in hills about three by four feet. The disadvantage is that they require poles and are somewhat later than bush beans, but when they are ready for use some people prefer them to the other kinds.

P. J. S.

BEETS.—(*Beta Vulgaris.*)

Beets are one of the most profitable crops grown in intensive gardening. The first thinnings may be used for greens, the later thinnings for bunch beets, leaving a full crop to be harvested. They are of easy culture and should be found in every home garden.

While the beet may be grown on a variety of soils it does best on a deep, rich, sandy loam. The land should be plowed deeply and manured with rotted stable manure the fall before. Just before freezing up of winter it may be thrown up lightly or plowed shallow again, to mix the manure with the soil and prevent it from washing. As soon as it is fit in the spring it should be plowed again, if necessary, and worked up with the harrow until it is fine and mellow. The loosening of the soil should be effected to a depth of 10 or 12 inches, if possible, as this makes a great difference in the quality of the crop. While the land is being fitted in the spring just before the last harrowing, is a good time to apply commercial fertilizers.

One thousand to fifteen hundred pounds of a complete fertilizer may now be applied per acre to be followed by dressings of nitrate of soda later.

For the early crop the turnip rooted and oval varieties should be sown as soon as the ground can be made ready in the spring. In about two months they will be ready for use. For the main crop, the long and half-long varieties may be sown about the same time or a little later. They require four or five months in which to mature. Most growers now prefer to use only the early varieties, making successional sowings to get the early, medium and late crops. They are generally of better quality than the long-rooted, late varieties, as they take less time to mature and are not usually checked in their growth by the dry weather or mid summer. The seed should be sown in rows from 12 to 18 inches apart according to the variety and method of cultivation, and the plants thinned finally to from 4 to 6 inches in the row according to the size of roots wanted.

The so-called beet seeds are really fruits, each one containing two or more seeds. On account of the rough, uneven husk which covers the seeds, or fruits, it is important to make the soil firm over the row after sowing, so as to bring the moist earth into contact with the covering of the seeds, and thus bring about an early and even germination. Otherwise the moisture may be a long time in penetrating the coats and the germination in consequence slow and uneven. Some soak the seed in water for a few hours before sowing to overcome this difficulty, but this method is better suited to small sowings by hand, as the moistened seed does not readily pass through the seed sower.

The crop should receive cultivation once a week throughout the growing season, or at least frequently enough to maintain the surface mulch and prevent the growth of weeds. After the plants have come up an application of from 50 to 100 pounds of nitrate of soda per acre may be given after the first hoeing, to be followed by two or three more such applications at intervals of a week or ten days.

At the first thinning the plants may be left about two inches apart, those removed being used for greens. If there are any vacancies at this stage some of the best plants may be transplanted to these places on a rainy or dull day. Later when the bunch beets are removed the plants may be left from four to six inches apart. The young beets taken out now will be very tender, especially if they have made rapid growth. They are tied in bunches of five or six and washed clean when they are ready for the market. When the later crop matures and is harvested the tops are removed either by twisting or better by cutting, leaving an inch of leaf stalk. They are either sold at once or stored in sand in a cool cellar. Three or four hundred bushels is a fair yield per acre. One ounce of seed sows 75 to 100 feet of row and five to eight pounds sow one acre.

Good varieties are Crimson Globe, Egyptian, Crosby's Early Egyptian, Edmand's, Blood Turnip. Boston half-long Blood, Boston Blood Turnip and Long Dark Red. Early Blood Turnip has a rich color and even shape and is a good variety for all round purposes.

P. J. S.

BROCCOLI. (*Brassica oleracea var. botrytis.*)

Broccoli is a member of the cabbage family. It is similar to cauliflower both in culture and use. Like cauliflower it is somewhat difficult to grow and thrives best in the cool weather of fall. It requires deep, rich, moist soil and protection from the cabbage worm. Seeds are sown in coldframe in May and the plants transplanted to the open the last of June or first of July. The rows should be 2½ to 3 feet apart and the plants about 18 inches in the row.

P. J. S.

BRUSSELS SPROUTS. (*Brassica oleracea var. gemmifera.*)

Brussels sprouts is another member of the cabbage family and its culture is very much the same as that of the cabbage. It is grown for the "buttons" or sprouts on the stem. These resemble very small cabbage heads but are more delicate in flavor.

The season is later than that of the cauliflower. The seed is sown in a hotbed or cold frame in April or May and the plants transplanted to the garden in May or June in rows 2 or 3 feet apart, and two feet in the row. Brussels Sprouts like the other members of this family requires cool, deep, rich soil. Frost improves the quality of the crop. It may be kept in storage in the same way as cabbage.

P. J. S.

CABBAGE.—(*Brassica obracca var capitata.*)

By A. Hector Cutten.

The first essential for success with the cabbage crop, as with other vegetables, is to have the proper kind of soil. A deep, rich, strong soil is necessary. The best cabbage soil is rather sandy, not less than nine or ten inches deep and thoroughly drained. Indeed drainage is absolutely necessary if a clay soil is used. A clayey or stiff subsoil is unfitted for almost any crop, as it delays operations in the spring and dries very slowly. Moreover the labor on soils having a clay or hard pan subsoil is nearly twice that on lighter soils, and often with less satisfactory results.

Presuming then that the land is well drained, it should be plowed deep in the autumn so as to allow the frost to pulverize the particles of soil. This sweetens the soil and places the plant food in such condition as to be ready for the plant at the proper time. Fall plowing also exposes the larvae and eggs of insects to the frost, thus lessening their numbers in the following season. By leaving the ground rough-plowed late in the autumn the frost will leave it earlier in the spring, allowing it to be worked in some instances more than a week earlier. The surface water will also get away much quicker. This applies to land for almost every crop. Many farmers make the mistake of harrowing their fall plowed fields, leaving them flat and smooth through the winter. Fall harrowing is good practice every two or three weeks to conserve moisture, but the fields should be plowed and left rough before the winter sets in.

The ground for cabbage must be heavily manured either in the fall or spring. If fertilized in the fall, green manure is all right but if in the spring the best results will be obtained from partly or well rotted manure, cow manure and horse manure mixed being the best. The best growers usually sow from 400 to 600 pounds of bone meal or some commercial fertilizer per acre and harrow it well in. In some provinces—but not to any great extent in Nova Scotia—the practice of putting out manure broadcast in the winter is followed. This practice no doubt is due to scarcity of labor and the consequent rush of spring work, but I do not think it pays. The melting snows and spring rains wash much of the valuable properties of the manure into the dead furrows, from there into the ditches, and away to the brooks and the rivers. Thousands of dollars worth of the best plant food is thus carried away to the sea, impoverishing fields that once were rich in phosphates, salts and minerals.

It is well to harrow the ground as soon as it is plowed and pulverize it well, not allowing it to bake in the sun. The sunlight and air will thus permeate it to a greater depth, the growth is more rapid and the natural sequence is earlier and better cabbage.

The best varieties of cabbage that have been tried and proven are Early Jersey Wakefield, a good second best is Charlestown Wakefield. Henderson's Early Summer is excellent for a general crop, for late or winter varieties the Danish Ball Head or any of the Drummond or Flat Dutch varieties are suitable.

The lines are generally marked off about two feet apart and the plants set 16 to 18 inches apart. The method requires from 8000 to 10000 plants per acre. If planted in rows 30 inches apart a crop of radishes, spinach or lettuce can be raised between the rows as these mature quickly and can be cut out before the cabbage grows enough to interfere with them. This double crop will help pay for the manure that is so lavishly used, but which is absolutely necessary to produce a large crop. While the plants are growing the cultivator should be run between the rows every ten days and the ground between the plants hoed as often as possible. If by the end of June the double-share plow is run down the centre of the rows, the cabbage will not require much more attention. This method, of course, cannot be followed if lettuce or radish are grown as well.

Probably the easiest way to raise the plants is by the "cold frame" method, or by the use of gentle bottom heat if started very early. The seed should be sown in March or early in April. It is absolutely necessary that the frost be excluded by covering the glass with straw mats or shutters, for unless the ground is kept above the freezing point the plants, of course, cannot grow. The cold frames should be placed in the warmest and most sheletered place possible, the soil should be light, well enriched with manure and thoroughly dug, levelled and raked for the reception of the seed. If sown in drills, they should be about two inches deep and the soil trimmed well over the seed.

Cabbage being a hardy plant can be transplanted into the field or plot as soon as the land is ready to work. Whenever grain can be sown cabbage can be safely planted in the open, as, if the plants have been properly hardened, they will stand five to eight degrees of frost. Late cabbage can be sown in the field in much the same way as turnip. Some do not advocate this method owing to the ravages of the turnip flea, but if sown when large quantities of turnips are sown the danger is not very great.

Possibly the insect pest most injurious to cabbages in Nova Scotia is the green caterpillar, a green glutinous insect about one-fourth to one-half an inch in length. Many remedies have been suggested by authorities, but I have noticed that when only a few dozen cabbages are grown in a garden they are affected almost as badly as when acres are grown. This leads one to think that when only a few are to be grown they should be put in the centre of a turnip field or in alternate rows with turnips. Thus the turnip will receive as many slugs as the cabbage and the damage done the turnip will not lessen the crop.

One remedy that is used effectually for cabbage worm is made by dissolving one pound of alum in three gallons of water. The alum is dissolved in boiling water and cold water added until the proper strength is reached. The solution should be sprinkled over cabbage and cauliflower plants every two or three days. This preparation is cheap and is innocuous to human beings. The cabbage maggot is not liable to trouble the beginner for a few years—at least that was my experience. but when it does come he is almost helpless. Many remedies are suggested. One is to make a hole close to the plant and drop in 9 or 10 drops of bisulphide of carbon, closing up the hole at once. Another is to put a cone around the plant just above the ground so that the fly cannot lay the egg. (The latter method is, of course, impracticable where cabbage are grown on a large scale). The eggs are deposited by a fly about half the size of the common house fly. The fly alights on the stalk of the plant close to the ground. With its head upward it backs down and deposits the egg just below the surface of the ground. Therefore anything that is placed around the plant above the ground and inserted into the earth will prevent this operation.

Club-root is another enemy of the cabbage grower and is difficult to eradicate. It is a fungous disease which attacks the root of the plant and is often so serious as to destroy almost the whole crop. It frequently occurs as a result of growing cabbage or other members of this family on the same ground year after year. A heavy dressing of lime should be applied to the soil which is infected with the disease, as the fungus is not able to thrive when in contact with this substance. If such treatment is not effective the planting of cabbage or any other member of the cabbage family on this ground, should be discontinued for three or four years until the fungus is starved out.

Lastly and perhaps what should have been mentioned first, see that good seed is sown. Good seed is plump, round and of a dull rich purple-brown color. Old seed assumes a whitish gray color and to remedy this the seed is sometimes oiled and run through a mill. Therefore be shy of buying shining oily seed; ask for the best no matter what the price. A good true stock of any seed will always command a good price as a seed grower has to exercise great care in cultivating, harvesting and cleaning. Remember the best seed is always the cheapest.

THE ADVANTAGES OF SAUERKRAUT.

Sauerkraut is by some considered very indigestible. This is, however, not the case when it has been properly prepared. It is made by adding 3 per cent of common salt to white cabbage, which withdraws a quantity of fluid from the latter. All varieties of cabbage contain quite a considerable quantity of fluid. Heavy weights are laid upon the cabbage after packing it in kegs, and so much fluid is pressed out that the cabbage fairly bathes in it. When kept at a temperature of 11 degrees C. it ferments by means of yeast and bacteria; the sugar is fermented and acid is formed. This acts upon the fibres of cabbage and after a time they are softened. When it is very thoroughly cooked the fibres are still further softened, thus making out of this indigestible vegetable the much more digestible sauerkraut. It has, further, the advantage due to its lactic acid of exerting a kind of disinfecting process in the intestine. In many cases of intestinal catarrh, especially when large quantities of decomposition products are present, sauerkraut may have a favorable action. It might also be added that the pleasant sour taste has a stimulating effect upon the appetite, especially in cases where the stomach is in good condition. This applies also to cases in which the loss of appetite is due to such influences as depressed spirits, overwork, etc., in which cases, also, no gastric juice is secreted. In order, however, that these beneficial effects may follow, care should be taken not to throw away all of the juice and then serve the sauerkraut quite dry. In this way the useful lactic acid content is diminished; this juice also has a very refreshing and pleasant taste.—*Dr. A. Lorand in Health Through Rational Diet.*

CARROTS.—(*Daucus Carota.*)

By H. H. Mc Nutt.

Something might be said on the growing of carrots for home use and the market. First, to get a good crop of carrots, or of any kind of vegetable, you must have a rich, well pulverized soil. A sandy loam well supplied with humus and plant food is what the carrot likes best. Such a soil is not apt to bake over the seeds and allows the young plantlets to come through the ground readily.

Second, be sure to have reliable seeds. In my experience, I have always found it best to test all my seeds before planting. A person will then know whether his seeds are going to germinate well or not. For early market carrots, I have always had good success in planting Chantenay. This is a good flavored half-long variety, well suited for table use. If left until October it will yield a large crop. For the late varieties, Danvers half-long is a good all round carrot and a fairly good keeper. I have never had a failure in these varieties.

For an early crop the seed should be sown as soon as the ground can be worked in the spring. Twelve to fifteen inches is far enough apart for the rows of early carrots, especially if they are to be cultivated by hand or by wheel hoe. For late varieties, and especially where the work is to be done with a horse the rows may be two to two and one half feet apart. Sow the seed about one half inch to an inch in depth and make the earth firm over the row. Some persons sow radish seed along with the carrots to mark the row. Tillage may then be started before the carrots are up. The radish plants break the crust and make it easier for the carrots to come through. Later they should be thinned to about four or five inches apart in the row.

Before planting, when the drills are made up, it is a very good plan to sow a small amount of a good fertliizer along the top of the row and then run the seeder right down over it. The seed will not come in contact with the fertilizer, which is washed down by the first rain, the young plants getting the benefit of it as soon as they come up. In general farming it is usual to follow a system of rotation of crops going from one field to another with the different crops. While such a practice results in better crops in general farming, I have had good success with carrots by growing them for twelve years in succession on the same piece of ground. I have always had bumper crops, and have nearly always had them on the market first. Carrots sown early in May are large enough for use by the middle of July, and sometimes earlier.

Only well rotted manure should be used and on land in good condition 15 to 20 tons per acre should be applied. This should be applied the fall before after the ground has been plowed deeply. The ground should then be plowed shallow and left thrown up roughly through the winter to hold the manure.

After the first rough harrowing in preparing the ground for the crop, apply about 1000 to 1500 pounds of complete high grade fertilizer or 100 pounds nitrate of soda, 400 pounds acid phosphate and 100 pounds of muriate of potash.

One ounce of seed, if it is fresh, is sufficient for 300 feet of drill, or two pounds per acre.

A good crop is 300 bushels per acre.

CAULIFLOWER—(*Brassica oleracer var botrytis;*)

By J. S. Bishop.

In selecting ground for growing cauliflower a deep, rich loam is preferable, although almost any soil suitable for growing vegetables and that does not suffer from drought in hot weather, will answer the purpose. The locality should be changed from year to year to avoid the disease called club-foot. Never attempt to use land that has been occupied by any of the cabbage family the preceding year. Best results will be obtained by manuring directly in the hill. A strong compost, prepared the fall before, made of black muck, hen manure, hog manure, wood ashes, in fact, any strong manure well composted and forked over is good.

After the ground has been ploughed and harrowed, furrow deeply about three feet apart using a good forkful of manure for each hill.

The early snowball varieties are best. If extreme earliness is required seed may be started in a hotbed and later transferred to a cold frame, but for ordinary cultivation the seed may be sown in boxes outside in a sheltered place as early in the spring as the weather will permit. Use only the best seed and as this is expensive, care must be exercised that no accident happens to the plants. They must be protected from poultry and not allowed to suffer for want of watering. When the plants have reached a suitable size, they can be transferred directly to the hill. If the manure is strong, do not let the roots of the young plants come in direct contact with it, but open the hill with the corner of a hoe and bring in a little fresh earth setting the plant in that.

In transplanting, it is a decided advantage to use a puddle or grout. This is composed of about equal quantities of clay and fresh cow manure mixed together in any old pail and thinned with water to the consistency of thin paste. Dip the roots of the plants in this mixture as you transfer to the hill. No matter if all the old earth shakes off, if you use this. Just before dipping in the puddle examine your plants carefully about the stem at the surface of the ground to see if any maggot is there. If so, remove with the finger nail, otherwise the maggot will destroy the plant which first turns blue and then dries up

After the plant is set out the next enemy is the cutworm and the trouble is on at once. However, you can prepare yourself for this pest by mixing Paris green with wheat bran or middlings, half a teaspoonful to the quart, with water enough to make the bran like chicken feed, and sow over the patch. The worms will feed on this as readily as on green stuff, or use this around the hills after the plants are set out.

It is the custom of the writer to set two plants in each hill and to go over the patch early each morning. A leaf dropped down indicates the presence of this worm just below the surface which can be easily found and killed. The idea of two plants to the hill is for a reserve supply to fill in vacancies that are sure to be made by insects rather than to grow two heads to one hill. The plants can be changed over to other hills with a spade after they have attained considerable size without retarding the growth.

Another common pest is the green worm that feeds on the leaves all through the growing season. The eggs of this worm are laid by a cream colored moth or butterfly that is particularly active in the hot sunshine. Set the children catching them with a butterfly net, or pick the green worms off after the eggs are hatched. If your cauliflower patch is adjacent to a field of cabbage or turnips the attention of the butterfly will be diverted over the field and only a comparatively few eggs will be laid n the cauliflower, and the situation thus saved.

When the plants are small keep the cultivator and hoe busy. By keeping the top of the ground stirred frequently the moisture is conserved and the plant will thrive.

After the plants begin to head the white curd will be somewhat exposed to the rays of the sun and should be covered with some of the outside leaves. Large outside cabbage leaves are good for this purpose, or the sun will cause the curd to turn dark.

Cauliflower is more delicate and tender than cabbage and needs extra care in cultivation. All the insects that infest one are common to the other, and side by side these pests will show a preference for cauliflower every time.

CELERY CULTURE

By W. T. Macoun, Dominion Horticulturist, Ottawa.

Celery (*Apium graveolens*) is much relished by many people and it is desirable that the methods by which good celery may be grown should be generally known in Canada.

Soil.—Celery is a moisture-loving plant and to have good celery it is necessary to provide it naturally or artificially with a liberal quantity of water during the growing season. A soil should, if possible, be chosen where dry weather will not affect the celery, as if checked in its growth it will not be as good as it would otherwise be. The muck soils are very popular for celery growing, as the supply of moisture from below is usually plentiful and constant. Moreover, these soils are easier worked and celery can be grown with less expense in them. Celery grown in muck soils does not keep so well as that grown in rich, friable sandy loam, which if it is sufficiently moist, is perhaps the best for celery. Not only does celery require a good supply of water to make it grow rapidly, but it should also have a liberal amount of available plant food. This is obtained by giving the soil a top-dressing of from 15 to 20 tons or more per acre of manure in the autumn, which should be ploughed under then if there is danger of leaching, or left until spring. A good plan is to plough under fresh manure in the fall and give a top-dressing of well rotted manure or chemical fertilizers in the spring which may be turned under with the gang plough or disced in. The ground should be loosened to a depth of five or six inches. The disc harrow and smoothing harrow are then used and the ground thoroughly mellowed and levelled. It is desirable to roll the land before the plants are set out.

Growing the Plants.—Celery seed loses its germinating power very soon and for that reason care should be taken in obtaining fresh seed from a reliable source. The seed should be ordered early and its germinating power tested before the time of sowing. If early celery is desired the seed should be sown during the month of March in a hotbed or, if desired, in the house. For late celery the seed is sown about the middle or during the latter part of April. The seed may take two weeks to germinate, hence care should be taken to keep the surface soil constantly moist from the time the seed is sown until it comes up. The seed is very small and should be sown quite shallow, being just nicely covered with soil. A good plan is to sow the seeds broadcast and sift a little loam over them, this being then pressed down. If the seed is sown in the house the soil should have good drainage. A good plan to ensure the surface always being moist is to keep a cloth or blotting paper on the surface of the soil until the seeds germinate when the plants should be given light gradually. The young plants grow slowly. Some prefer sowing the seed thinly and thinning the plants where they stand instead of transplanting, but many growers prefer transplanting, as the root system of the plants is then much better when they are set out. When the seedlings are about two inches high they are transplanted to about two inches apart each way in the hotbed or cold frame. If the plants become spindling before it is time to set them out, about half of the top may be cut off. The early celery is planted out during the month of May when danger of severe frost is past, and the later celery in June or even as late as July.

Planting.—After rolling the soil as stated before, the land is marked out in rows about four feet or more apart. If the celery is blanched with boards three feet is sufficient. Planting should be done during cloudy or wet weather or when the ground is quite moist. The plants should be set firmly in the soil as the late celery, especially, being planted during hot weather will suffer unless the planting is carefully done. The average distance apart of the plants in the row is five to six inches. Some growers prefer planting in a double row with the plants six or seven inches apart, four or five feet being left between each double row. The old plan of digging out a trench about a foot wide and eight to ten inches deep and mixing manure with the soil in the bottom of it and setting the plants in the trench is not now practised except by amateurs. Where a small quantity is grown it is still one of the easiest methods of growing celery as the stalks can be readily covered with soil, resulting in a well blanched celery of good quality. Another plan practised by some growers is to make trenches with the double mould board plough, put manure in, mix it with the soil in the bottom and close up and level down the trenches and plant the celery on top.

Cultivation.—As soon as possible after planting, the ground is cultivated and thorough cultivation is kept up until the celery is moulded up. It is of the utmost importance to keep the plants growing well throughout the season. Shallow cultivation is desirable as the celery is not a deep rooted plant and it is important not to injure the roots. Furthermore, deep cultivation will loosen the soil below many of the roots, causing the soil to dry out there and thus checking the growth of the celery. The importance of keeping the plants growing thriftily may also be emphasized by stating that sometimes when plants are checked in growth during a dry time they will throw up flower stalks and the celery will be ruined. This applies particularly to early celery. Hollow or pithy stalks are usually the result of a check in the growth of the plant, although it has been found that it is sometimes due to inferior strains of seed.

Blanching.—Celery is blanched to make it crisp and tender and to lessen its strong flavour, which is unpleasant when it is green. When the celery has grown tall enough to make good stalks it is time for blanching. The very large growers of celery use comparatively little hand labour in preparing the plants for blanching, merely moulding up the soil about the plants with a plough especially made for the purpose. Those most anxious to have the best celery, however, go over each plant by hand, breaking off suckers and weak outside stalks, then drawing the stalks of the plant together and holding them in position by packing soil about the plant. This may be begun when the plants are about six inches high. This work is done very rapidly. The rest of the work is now done with the spade or plough, or both, piling up the soil well about the plant, merely leaving the top leaves and especially the crown or central part of the plant exposed. This moulding up should not be done when the soil is very wet as it would be likely to stick to and discolour the plants.

Early celery is now very generally blanched by means of boards, which, while not giving celery of quite as good quality as if blanched by soil, give very satisfactory results. Boards one inch thick and twelve to fourteen inches in width are most suitable. They are placed on each side of the row and brought up as close to the plants as possible and are held in place either by stakes or strips nailed or hooked across the boards. A little soil is thrown up along the base of the board to prevent the light getting in that way. Early celery will blanch in from two to three weeks when boards are used. For home use celery may be blanched with good results by using four inch tiles, which are placed over the plants. Celery blanched in this way is clean and of good quality.

Celery for late use is not blanched in the field except where the climate is mild enough to leave it outside until used. It is, however, often gone over once to remove the suckers and weak outside stalks and banked up a little to hold the plants upright.

Storing Celery for Winter.—The best way to keep celery is to dig it up during the month of October or before severe frost and store it in a dark, cool, well ventilated cellar which is not wet but yet not too dry. Before storing, some of the outer leaves may be removed and the roots shortened in a little, if they are very long. It is not necessary to leave the soil on the roots if the plants are stored at once after digging, although if there is plenty of room it is better left on. The celery should be replanted in soil in the cellar, the roots only being covered with soil. The celery is set in rows. As ventilation between the plants is important laths may be used for separating the rows with good effect, unless there is room to plant them far enough apart that air can readily pass between. If the cellar is very dry and the celery needs watering during the winter, arrangements should be made for watering without wetting the tops, as wet tops will soon cause rotting. Celery could be kept outside and used when wanted if protected from frost, but great care would have to be taken and ventilation afforded, for if the tops were covered with soil or any other material the celery would be liable to rot. If no cellar is available the celery might be better protected outside by digging it up and replanting closer together in a pit, the top of which could be covered with boards. Where the amount of moisture in a cellar can be well regulated celery may be stored on shelves or racks, tier upon tier, but by this method there is danger of the celery losing its crispness unless close attention is paid to keeping the roots sufficiently moist.

Celery is usually little injured by insect pests, but much damage is often done by the Celery Blight or Rust, and the Leaf Blight. The former disease is particularly troublesome in dry seasons and in dry soils, and to avoid it moist soils should, if possible, be chosen. Small, yellowish or greyish spots on the leaves are the first indication of the disease. These gradually spread until they meet. The leaves eventually turn yellow and afterwards brown, the plant becoming much weakened. The disease known as Leaf Blight affects all parts of the celery above ground. The characteristics of this disease are watery patches on the stems and leaves. Small, black dots appear on these from which the spores are given off. These re-infest the plant and cause the disease to spread. This disease is also carried by means of the seed, hence seed should be used which is clean. Both the Celery Blight and the Leaf Blight can be controlled by thorough applications of Bordeaux mixture in the proportion of 4 lbs. bluestone, 4 lbs. lime and 40 gallons of water. Spraying should be begun when the plants are in the seed beds and the plants kept covered with the mixture until the cooler and moister weather of early autumn.

Rotting of the heart in storage is induced by lack of ventilation, too warm a cellar, and by watering the plants from above. These conditions should be avoided to lessen this trouble.

CULTIVATION OF SWISS CHARD.

By James Allan.

Swiss Chard (Beta Cycla) is one of the varieties of beet. It differs from the common beet in not having an edible root. The part which is eaten is the top. This top may be served in two different ways. The leaf or green part may be cooked and served the same way as spinach, the ribs and leaf stalks the same way as asparagus, while both make a delicious and easily prepared dish.

The culture of this plant is very easy and it should be in every home garden. Ground that has been prepared for beet seed suits the growth of Chard as well. Sow the seed in rows about 18 inches to 2 feet apart thinning out to about 8 inches apart in the row and cultivate as you would beets. As the leaves get large they should be taken off and cooked. By taking the leaves as they grow there should be a constant supply right up until time of frost.

CORN.—(*Zea Mays.*)

Sweet corn can be grown to maturity in the warmer parts of the province. It can be grown for table use as green corn in any part of the province. Corn differs from many vegetables in that it does not require as fine a condition of the soil. The main season crop can be grown on land which has been recently in sod and also with the use of fresh manure. In this respect the crop resembles late cabbage, both of which may be used to prepare the ground for finer vegetables. They are then sometimes spoken of as preparatory crops.

Corn is a tender, warm season crop. It thrives on a sandy loam. Since it requires plenty of moisture, it is a good plan to begin the preparation of the ground early and give several harrowings at intervals until the time of planting. This conserves the moisture, which has been absorbed from fall and spring rains. After the crop is up, it may be necessary to give frequent cultivations for the same reason. If a period of drought comes on, two or three cultivations a week, in the middle of the day, together with occasional light applications of nitrate of soda may be given with advantage.

Sweet corn is grown either in hills or drills. The drills are placed three to three and a half feet apart and the plants 8 to 12 inches apart in the drill. The hills are placed about three feet apart each way for the early varieties. In the hills the individual plants receive more sunlight, a very important matter in obtaining an early crop. An additional advantage in this system is that the crop can be cultivated lengthwise and crosswise, thus reducing the amount of hand work.

If the crop is to be grown in drills, about ten tons of manure to the acre should be applied broadcast and disked in. Otherwise the manure may be applied in the hill. For quick early growth an application of commercial fertilizer should be made at the time of planting or shortly before. From 500 to 800 lbs. of a complete fertilizer to the acre is recommended, part to be applied in the hill. If separate chemicals are used, about 150 lbs. of nitrate of soda, 300 to 400 lbs. of acid phosphate and 150 to 200 lbs. of muriate or sulphate of potash may be used. Half of the nitrate of soda might be applied at the time of planting and the remainder when the corn is about four or six inches high.

Corn which is expected to ripen or to produce an early crop for the table should be planted before the end of May, certainly not much after the first of June. Sometimes a late frost will cut the early planted corn, but unless this is very serious it recovers and is earlier than later planted corn. The seed should be planted to the depth of one or two inches in moist, loose soil and the ground made firm over the seed. Early varieties are Golden Bantam, Mammoth White Cory, and Early Crosby. One quart of seed will plant 200 hills, or 10 quarts to the acre.

P. J. S.

CRESS.

There are three kinds of cress, all members of the cruciferous, or cabbage family. These are the Upland (Barbarea vulgaris), garden (Lepidium sativum), and water cress (Nasturtium officinale). The cresses are used for salads and for garnishing. The first and second kinds are easily grown in any moist garden soil. Sow the seeds early in the spring in fine, rich earth in drills, six or eight inches apart. Both kinds are hardy, cool-season plants and do best in spring or fall. The leaves should be used before the flowers appear.

Water cress grows best on the edges of a cool stream or spring, although it will do fairly well in the ordinary garden if given plenty of water. It can easily be grown from seeds, or from cuttings of the stem. It is a perennial, and once well established will grow year after year without care.

P. J. S.

CUCUMBERS.—(*Cucumis sativis.*)

Cucumbers are a tender short season crop. In outdoor culture they are usually planted about the first of June or shortly after. They are killed by the first heavy frost in the fall.

Like most vegetable crops cucumbers thrive on a warm sandy loam. They do well on a southern exposure where they get plenty of sunshine. Since they are planted late and must mature early, it is necessary to provide conditions for rapid growth. The ground should be moist and in good tilth at the time of planting. It should contain an abundance of readily available plant food so that the plants will make an early start and become well established before dry weather of midsummer sets in. To this end the ground should be plowed in the spring or even the fall before and should be harrowed at intervals several times before planting to improve the tilth and conserve the moisture. It may be manured in the fall, or at the time of planting in the spring. In the latter case the manure should be well rotted so that the plant food will be readily available, unless a liberal allowance of commercial fertilizer is also given to supply the immediate needs of the crop.

About 1500 lbs. per acre of a high grade complete fertilizer such as the 4, 8 and 10 mixture is recommended for cucumbers. The equivalent to this in separate ingredients would be nitrate of soda 300 lbs., tankage 750 lbs. acid phosphate 700 lbs. and muriate of potash 250 lbs. The object should be to apply the nitrogen partly in organic form as tankage so that it would not be too quickly available.

If only the readily available form, such as nitrate of soda is used it should not be applied all at once but at frequent intervals after the plants have come up so as to provide for the continuous growth of the crop.

Cucumbers are usually planted in hills, the hills being four by six feet apart. A shovelful or two of well rotted manure and a handful of high grade fertilizer should previously be mixed with the soil of each hill. Eight or ten seeds are then dropped in the hill and covered with about an inch of soil, which is packed down firmly over the seed. After the plants have advanced beyond danger from insect pests they are thinned out, leaving three or four of the strongest to a hill. Cultivation should be frequent until the plants begin to cover the ground when they are hilled up at the last cultivation and left to themselves. In picking, the plants should be gone over every day or two and all green fruits which are large enough removed, as the plants cease to bear as well as soon as their fruit begins to ripen.

Cucumbers are now largely grown as a forcing crop under glass to be put on the market almost any time during the year. They are most frequently grown for the early market by starting them in hotbeds or in the greenhouse and afterward transplanting to the field or garden. As these plants do not stand transplanting very well, pots, berry boxes, or inverted sods, are used in which to sow the seeds. In transplanting, the whole ball of earth or the sod is moved with the plant, thus avoiding any serious disturbance of the roots.

For an early crop of cucumbers in outdoor culture the seed should be sown in the greenhouse or hotbed about the last of April or first of May. Three inch pots should be filled with a soil prepared from two parts of rotted sod and one of rotted manure with the addition of small quantities of leaf mold and sand. The whole should be thoroughly mixed and passed through the sieve. About three seeds should be sown in a pot, from one quarter to one half an inch deep, and the earth pressed moderately firm over the seed. It is important not to allow the plants to receive a check in any way. They should be kept free from draughts. They should have a moist atmosphere and a night temperature of 60 to 65 degrees with a slightly higher temperature by day. They should be shifted into a size larger pot from time to time to prevent them from becoming pot bound. Shortly after they have received their last potting they should be put into a cold frame to be hardened off before being planted out into the garden. When settled warm weather has arrived, often here not until the middle of June, they may be planted out into ground that has been previously well prepared. It is important not to transplant to the open ground too early, for if the plants receive a check through exposure to cold weather—even though there is no frost—they will not be as early as cucumbers grown from seed planted out of doors. If a small frame and sash are used for a time to cover each hill, the plants may be put out earlier than this. They will then give an earlier and much larger crop.

Two or three pots of plants may be set in each hill. But when they have become well established they should be thinned out. leaving only one plant where each cluster stood before.

The White Spine is one of the best varieties of cucumbers. One ounce of seed is sufficient for 70 or 80 hills or about two pounds per acre.

P. J. S.

DANDELION.

The common dandelion, regarded by many as only a weed, is an important garden vegetable. Seeds may be taken from common wild plants, or better, bought from a seedsman. The French have greatly improved this vegetable. Sow in fine, rich earth in the garden early in the spring, in rows ten to twelve inches apart. Later thin to ten or twelve inches in the row. The plants may be improved by balancing. The leaves are used as greens and are highly recommended for their action upon the liver.

P. J. S.

ENDIVE—(*Cichorium Endiva*).

Endive is a salad plant generally used in the fall when it is considered better than lettuce. Its culture is much the same as that of lettuce. The seed may be sown early in the spring, or, as is usual when wanted for fall use, from June to midsummer. In the natural state the plant is rather bitter. It is improved by being blanched before being used. This is accomplished by gathering up the leaves and tying them together to exclude the light from the centre of the crown. Boards may be used as in blanching celery, or a flower pot may be inverted over each plant. The late crop of Endive may be lifted and stored in a cold frame, pit or cellar and blanched by excluding the light.

P. J. S.

GINSENG CULTURE.

By W. T. Macoun, Dominion Horticulturist, Ottawa.

For nearly two hundred years there has been a trade in ginseng between America and China, but during the last half century, the price obtained for the root has gone up so rapidly that Ginseng is now worth more than seven times as much as it was fifty years ago. This increased price is partly due to a growing popularity among the Chinese for American Ginseng, and partly because the wild root has become more difficult to get. The high prices obtained for ginseng soon encouraged the cultivation of this plant and like many new industries the immense profits in growing ginseng were heralded on every hand before these profits were actually made. While good prices have been obtained for much of the cultivated root, the largest profits have so far come from the sale of seeds and plants to those who wished to experiment.

The American Ginseng (Aralia quinquefolia), is a native of Canada and the United States. It is closely related to the Chinese Ginseng (Aralia Ginseng) and belongs to the Aralia family. The ginseng is also nearly related to the

Wild Sarsaparilla (Aralia nudicaulis) but is a much smaller plant, growing only from 12 to 18 inches high, although often reaching 24 inches under cultivation. Instead of the flower stalk coming from near the ground like the wild sarsaparilla, it grows from the base of three compound leaves, all attached to the main stem by their petioles or leaf stems at the same point, each leaf being divided into five leaflets. There is another plant even more closely related to the ginseng, namely, the Ground Nut (Aralia trifolia) which is often mistaken for ginseng. It resembles the latter very much in the leaves, but it usually has three leaflets to a leaf instead of five. The flowers of the ground nut are white; those of the ginseng, greenish. The flowers of both are in clusters or umbels. The fruit of the ginseng is scarlet when ripe; that of the ground nut is greenish. The fruit of both is in clusters. The root or tuber of ginseng is long; that of the ground nut is almost round. The ground nut is a smaller plant than ginseng.

Ginseng is now very rare in the wild state in Canada, but was formerly common in the Provinces of Ontario and Quebec in hardwood forests on rich land.

The ginseng root has long been used by the Chinese, who value it very highly. It is thought by them to have remarkable properties, such as the power to ward off all kinds of sickness. It is quite probable that it has certain medicinal properties known to the Chinese. It is usually made into a tea and is also used by the wealthy for flavouring food. Those ginseng roots with several prongs, giving them somewhat the form of human beings, are particularly prized and higher prices are paid for such roots. The ginseng so far as is known in America has not great value as a medicinal plant, though it has slightly stimulating effect and is a specific for hiccough. The Chinese prefer the ginseng grown in China, but have been quite willing so far to pay good prices for the American root.

Ginseng is usually propagated from seeds and each plant after three years of age will produce from fifty to one hundred or more seeds. Seeds of the ginseng were sold for a cent or even two cents apiece when the interest in ginseng was at its highest, but they can be obtained for less now. One of the first drawbacks to the culture of ginseng is the time required, about eighteen months, for the seed to germinate. Thus, seed ripened in the autumn does not germinate until a year from the following spring. As the seed is precious it is not sown as soon as it is ripe, for, lying dormant in the ground as it would do during the next summer, it is liable to be injured in some way. It should not be let become dry. The best plan is to stratify the seed as soon as it is ripe, leaving the pulp on. A mixture of sand, loamy soil, and leaf mould is rubbed very fine, so fine that it may be sifted out when desired and leave the seeds. A box with a lid is useful for the storing of the seeds. After putting in about one inch of the prepared soil scatter the seeds thinly on top. Put in half an inch more soil, and so on until all the seeds are in. The box is now closed and buried four or five inches deep in well-drained soil where water will not lie at any time. The seed is left buried for a year. It is taken up the autumn after being buried and sown at once in a bed specially prepared for it, about four feet wide being a convenient size. It should be inclosed by six inch boards for greater protection. The seed bed should be made of soil with a large amount of vegetable matter or leaf mould in it, of such a character that it will not bake, and free of sticks and stones which might interfere with the development of the roots. The seed is sown about one inch deep two inches apart, in rows about three inches apart. After seeding, the bed should be mulched for winter with about two inches of decayed leaves. Early in spring remove most of the leaves, the finer parts being left for a mulch on the surface of the soil, through which the young plants will soon make their appearance. Ginseng grows naturally in shady places and will not succeed in the open, hence shade should be given the beds in the spring. Sometimes an open space in the woods is found suitable for a seed bed, but the most satisfactory plan is to use laths. Frames are made the width of a lath and about six feet in length, the laths being nailed about an inch apart. Where a large plantation is made the frames are raised about six feet high so that the grower may walk upright beneath. The sides of the enclosure should also be protected with these frames to prevent the entrance of sunlight. If only a few plants are grown the frames may be raised about eighteen inches above the bed. During the summer the bed should be kept free of weeds, as plants may be transplanted at any age, though the best growers now transplant the seedlings the autumn of the first year after the leaves fall. The permanent bed is made much the same as the seed bed, but is usually wider and there should be at least a foot of of good soil. This should be thoroughly worked over before the seedlings are transplanted. The young plants should be taken up with great care so as not to injure the roots, and re-planted in the permanent bed about eight inches apart each way. The wider the plants are apart the less danger there is from disease. The plants should be deep enough so that the crown will be about two inches below the surface of the soil. The bed is now mulched for winter as in the case of the seed bed. During succeeding years the ground is kept free of weeds and the surface stirred to encourage as rapid growth as possible. The plants begin fruiting when three years old and the seed may be used to start new plantations. The roots are large enough for export when four to five years old and should average about two ounces each in weight. The roots are carefully dug, cleaned and dried before shipping. Gradual drying in warm air makes a better root than quick drying in hot air; they are sometimes dried in the sun. Drying takes from two to eight weeks, depending on the system. A good method of drying is to place a box with wire shelves above a stove when the warm air passing upwards dries the roots very well. Meanwhile the fibres are rubbed off. The roots lose two-thirds of their weight in drying.

Several troublesome diseases have handicapped and discouraged ginseng growers during recent years, that causing the greatest injury being the Alternaria, which affects both leaves and stems. Sometimes this is so bad that the leaves are quite destroyed, the seeds do not ripen, and the roots do not make the growth they should. There is also a soft rot of the root. Damping off of the seedlings sometimes causes considerable loss. The Alternaria can be controlled by thorough spraying with Bordeaux mixture, beginning early in the season.

Nematode worms have also caused considerable injury to the roots in some places, and no good remedy has been found so far for these.

There may be fair, and even good, profits in the future for the patient and thorough ginseng grower, but for the majority of people it is feared that the long wait necessary before the roots are large enough to be sold may lead to carelessness, when time and money will be lost. Furthermore, although ginseng is at present sold at good prices, from $3 to $7 a pound having been obtained for the root in recent years, the future market is uncertain, depending as it does on the whim of Chinamen who may at any time decide that American grown ginseng has no value in curing disease and may only accept that grown in China and Korea.

HORSE-RADISH.—(*Cochlearia armoracia.*)

Horse-radish is of easy culture, so much so that it is apt to become a weed. It is propagated by root cuttings. These are taken from last season's growth and are about the diameter of a lead pencil or a little larger. They are cut about six inches in length. They should be planted in the spring in deep, rich garden soil with the top of the cutting about three inches below the surface of the ground. The rows may be 18 to 24 inches apart, and the plants about one foot apart in the row. Horse-radish is sometimes planted between the rows of early vegetables, such as cabbage or beets, and given the whole ground after these are removed. The roots are grated, served with vinegar and used as a relish with meats.

P. J. S.

KALE.—(*Brassica oleracca acephala.*)

Kale is one of the hardiest members of the cabbage family. It is used for greens in winter and spring. It is valued because it can be obtained at a time of the year when green vegetables are scarce. Its culture is similar to that of cabbage, but somewhat easier. The seeds should be sown in deep, rich soil in rows or hills far enough apart to allow of horse cultivation, with the plants about two feet apart in the row. One ounce of seed will sow two hundred feet of drill.

P. J. S.

KOHL RABI (*Brassica caulorapa*).—ITS USE AND CULTIVATION.

By James Allan.

Kohl-rabi belongs to the cabbage family. The bulb part resembling the turnip is really an enlargement of the stem. In some varieties this enlargement of the stem is the size of an orange or small cocoanut, in others as large as a man's head. This is the part which is cooked for food.

The flavor which is very agreeable resembles partly that of the turnip and partly the cabbage. It is best if pulled when it is from two to three inches in diameter while it is tender. It is prepared for the table in the same way as turnips and sometimes served with sauce. The Germans appreciate the vegetable very highly.

The seed is generally sown in the garden or field where the plants are to mature as soon as the ground can be prepared in the spring. The rows are placed 12 to 18 inches apart and the plants thinned to from 8 to 10 inches apart in the row. Sometimes for extra early use it may be started in a hotbed with a gentle heat. In the latter case when the plants are two inches in height they are transplanted to the open field in well prepared soil the same distance apart as when planted outside. Early White and Early Purple Vienna are the two leading varieties. There is no choice between the two except that the white seems to have the lead in the markets. Sowings should be made at intervals of two to three weeks, so as to have tender plants for table use during the season.

The Kohl-rabi will stand considerable drought. It should have thorough cultivation and all weeds should be kept down to insure successful and rapid growth. When the plants are ready for market, which would be about five weeks from the sowing of the seed, they are pulled, cleaned and put into bunches of three.

The larger varieties are grown for stock feeding just in the same manner as turnips. They are stored in cellars where they keep just as well. In some of the European countries the farmers prefer them to turnips for dairy stock, as the Kohl-rabi does not impart an ill-flavor to the milk.

LETTUCE—(*Lactuca Sativa*).

By J. R. Dickson.

Lettuce is a salad crop, and is classed as one of the best money makers of the market gardener. It requires but a short season to mature and should be treated as a companion or a succession crop in the market garden. It is also largely grown as a forcing crop during winter.

There are three main types, viz., (1) head or cabbage varieties; (2) Cos varieties, with upright leaves which are made to form elongated heads by gathering leaves together and tying; and (3) the curled varieties which do not form compact heads, but large masses of curly, crisp leaves.

The last named is the class which is in demand in our local markets. Grand Rapids, one of this class, is an excellent variety both for outdoor crops and for forcing.

Outdoor Crop.

For early use in spring, it should be started in the forcing house or in hotbeds from the middle to the last of March. Sow in flats in drills two inches apart and at a depth of one-quarter of an inch. When the seedlings have formed their first true leaves, transplant to flats at two to three inches apart each way; and when they begin to crowd they may be planted out in cold frames at a distance of six to eight inches between the plants, and there matured.

For the later crops, sow where the crop is to mature, as soon as the ground is fit in spring, in drills twelve inches apart at a depth of one-half an inch, or sowings may be made between the rows to be subsequently occupied by some late maturing crop. Thin out the seedlings, when they have two or three leaves, to six to eight inches apart in the drills. The plants thinned out may be transplanted to other rows, and will mature a little later.

Keep up successional sowings during the spring months but not longer as there is not sufficient demand for the crop during the summer months to make it pay. If summer lettuce is wanted, the Cos varieties should be sown.

The soil for the seed flats is made up of three parts of rotted turf taken from a sandy loam to two parts leaf mold; and for the transplanting flats add one part of well rotted manure.

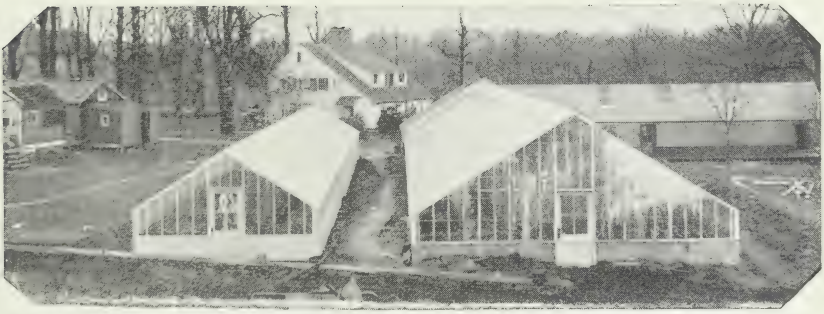
Lettuce succeeds best in a well-manured loose, warm soil; so the ground should receive a heavy application of barnyard manure and be preferably plowed in the fall. If manure is applied in the spring, it must be well rotted and decomposed. Get the ground into good tilth before planting. No commercial fertilizers, in addition to manure, need be applied, but it will increase the growth and hasten the maturity of the crop if a dressing of Nitrate of Soda be made along the rows after the plants have got a good start. This may be at the rate of 200 lbs. per acre. It is better to apply the nitrate in two applications.

Cultivate often to preserve a surface mulch and retain the moisture and to keep down the weeds.

Winter or Forcing Crop.

Letttuce as a forcing crop is extensively grown during the late fall and winter in heated greenhouses and also in hotbeds. In the greenhouse, solid or ground beds

Interior Lettuce House, Irondequoit, N. Y.



Small houses erected at Rye, N. Y., the entire product of which is used in the Grand Union Hotel, New York City.

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are superior to the raised benches, but very good results are to be had with the latter. For the first forcing crop, sow about the end of August. The crop will be ready for market early in November. Sow the seed in flats in drills two inches apart at the depth of one-quarter of an inch. When the first true leaves have formed, transplant into flats at two or three inches apart each way. Three or four weeks thereafter, set out the plants in the benches at a distance of six inches apart. The benches should be filled to a depth of six inches with the following compost,—two parts of well rotted turf, taken from a light sandy loam, and one part each of leaf mold and well decomposed horse manure, thoroughly mixed.

Twenty-four hours before setting out the plants, the bench soil should be thoroughly saturated with water and allowed to drain off. Set out the plants at a distance of six inches apart. With this preparation, no watering, or at least very little, will be required until the plants begin to mature, though it is advisable to syringe in the mornings on bright sunny days. After the plants are well started, go over the benches with a hand fork to remove the weeds and loosen up the surface soil, and repeat this operation every two weeks until the plants cover the space. Ventilate well on every possible occasion. Keep coolest just after planting and when the plants are maturing. In general, keep a temperature of 55 to 60 degrees by day and 40 to 45 degrees at night and in dull weather down to 50 degrees by day.

For the second and later crops, treat in the same way. Keep up successional sowings so as to be ready to set out plants in the benches as soon as the maturing crops are taken off for market. These sowings may be continued until the seed is sown for the crop which will be set out in cold frames early in spring as previously mentioned. The crop in winter will take two to four weeks longer to mature than the fall crops.

After each crop is removed, incorporate with the soil of the benches one to two inches of thoroughly decomposed horse manure. Ground bone is a valuable addition to the bench soil and may be put in the soil at the first planting or subsequently when a crop is removed. Use one quart of bone meal to one bushel of soil, i. e., 1 in 32. If hotbeds are to be used in this latitude, the raising of the crop should be confined to the late fall crops maturing in November and December, and to an early Spring crop started about the first of March. Hotbeds, so far as we know are not to be recommended during January and

February. A modification of the hotbed system is in use at the N. S. A. College, Truro. A five sash frame has been fitted up within a cool greenhouse and is used as a hotbed for raising the crop, with quite satisfactory results, during fall and spring. By this method a double protection of glass is got and the temperature can be more easily regulated. Under a system of hotbeds or some such modification as the above, the crop is treated in much the same way as stated for the greenhouse. The hotbed itself is prepared by placing in the frame about two feet of fermenting horse manure which should be well tramped down. On top of this manure is placed a six inch layer of the before mentioned compost as prepared for the greenhouse benches and the plants set out therein when ready. Careful attention to the ventilation of the beds is required. The frame is covered by glass sash, and in addition, when the temperature falls below 32 degrees, mats and covers are also put on.

Good varieties (used at the College here) are:—Head Lettuce:—New York, Marblehead Mammoth Cabbage, Market Gardeners Private Stock (good for forcing). Curled or Loose sort:—Grand Rapids (good for forcing).

One ounçe sows 400 feet of row or about six pounds to one acre.

THE MUSHROOM (*Agaricus compestris*), AND ITS CULTURE.

By James Allan.

The cultivation of mushrooms has lately become of commercial importance owing to the high prices which have been obtained both in Canada and the United States. In most European countries, the gardeners and florists have long been successful growers. The growing of this crop is rather uncertain. While I have no desire to discourage anyone from undertaking the cultivation of this valuable fungus, it should not be attempted on a large scale by amateurs until they have become thoroughly acquainted with all the details, which require very careful attention.

The conditions under which mushrooms may be successfully grown are limited, therefore much care is necessary from the start. In a good many cases, failures can generally be traced to the reckless disregard of conditions or to wrong ideas as to the cultural requirements. They are usually due to (1) poor spawn, (2) unfavorable temperature, (3) very poor material or manure, (4) and very heavy watering during the early stages of growth. They should be grown where conditions can be controlled, and success should then be invariable.

Mushrooms may be grown to advantage in sheds, caves and cellars. Very often the vacant spaces beneath greenhouse benches are utilized. Where the conditions of temperature and moisture are favorable this would be a good place in which to grow them.

Perhaps the most important factor is that of temperature. I have found the best temperature at which to grow this valuable crop to range between 55 and 59 degrees Fah. If we have sudden changes this will retard the growth, and many of these changes will destroy a whole house full, thus greatly decreasing the profits of the mushroom crop.

The next important factor is the moisture. A very damp place or one that has water dripping from the ceilings or walls is very undesirable. But a fairly moist condition of atmosphere should be maintained throughout the entire season of growth. There should also be proper means of ventilation to control it.

A cellar or some similar construction is generally used for the growing of mushrooms where the temperature and moisture are more easily controlled. If artificial heat is required to maintain the proper temperature, it can be had at very little extra expense. Mushrooms for family use can be grown in cellars of dwellings, but care should be taken to have the manure prepared outside, as the odor from fresh manure in the cellar is not very desirable to have in the house.

As to the preparation of the compost we commence to collect the fresh manure from horse stables. I have found in my experience that manure from horses, that have been fed on good hard grain and clean hay with good clean straw for bedding, has given the best material for the growth of mushrooms. Fresh manure from cows is sometimes used with horse manure in forming up the beds, but I have not seen any advantage whatever from its use over that of plain horse manure. In fact, in my opinion it is not as good. Hog manure is not to be used whatever in the composting of mushroom material as it is impure and malodorous and makes a great propagating bed for noxious insect vermin. Manure containing sawdust or shavings is not very good for mushroom growing, neither would I care to use manure which contained salt hay, peat moss or corn stalks to any extent, not that it is deleterious to the mushrooms but it should be used only in very limited quantities, if at all. In large cities the municipal ordinances require that all stable manure be removed promptly from feeding places, or be disinfected. If disinfected, crude carbolic acid, or sometimes corrosive sublimate is used, hence this manure should not be used for mushroom material. I question whether the manure from veterinary hospitals is of value. It is of no use to be courting risks in mushroom growing, since we have plenty of such risks to contend with any way.

Having thus collected a desirable quantity of fresh manure, it is put in some place under cover to keep rains and drying winds from it. It is piled up to about the depth of three feet taking out all foreign matter as bottles, sticks, wires or trash. Perfectly dry straw should be kept to one side, but leave all straw in the manure which is wet with urine. If this material is dry it should be well sprinkled with water. The pile is left for a few days when violent fermentation will take place the temperatature very often going higher than 150 degrees. It is then turned over, putting that which was on the outside of the old pile on the inside of the new, and that which was on the inside on the outside. This pile is well tramped down, and the thermometer is inserted to ascertain the heat in the pile. Be sure not to let it become fire fanged.

In a few more days repeat the operation of turning over and continue to do so at intervals of three days until the heat of the pile has dropped down to about 120 degrees. To find about the proper texture, take a handful and squeeze firmly. If it holds well together and does not emit any water, it is in the proper condition for use.

The next operation is the placing of the material into the proper beds. Where floor space is not an important consideration it is best to have the beds built either flat or in ridges. If one must economize in space the shelf system will be found very good, while the additional cost of labor involved in growing a crop in this manner is an item to be considered also. When the mushroom crop is over and all material taken out, the shelves should be thoroughly cleansed and given a good coat of lime, to avoid any increased danger from insect depredations.

If flat beds are used they should be from 8 to 12 inches deep, putting in about three inches of manure at a time and making it perfectly firm, then add more, and so on until completed. In ridges one will get more surface space. They are made two feet at the base and run about 20 to 24 inches high making the pile compact and tight. Another good way is to make slanting beds when they are made against a wall, thereby also getting more surface space.

Having thus got the manure into its proper place, and the thermometer inserted, watch until the temperature drops down to 70 degrees. It is then time to put the spawn into the bed. This spawn is the carrier of the mushroom "seed" or mycelium. It is made up of horse and cow manure and a little loam, then inoculated with mycelium or "seed" of the mushroom.

Having the spawn on hand it should be broken up into pieces about the size of a small egg and placed about 8 inches apart in holes made in the manure about three inches deep, being sure to fill the hole in again and make very firm. On no condition should the bed be watered immediately after spawning. In about 10 or 12 days the spawn or mycelium will have run through the entire bed. It is then time to case the bed, or cover it over with loam to the depth of one or one and a half inches. This loam should principally be chopped rotted sod or soil procured from beneath a sod field. After applying this cover to the top of the bed it should be made perfectly firm with the back of a spade.

In order to conserve the moisture, put on a covering of clean rye straw to about the depth of two inches, until the young mushrooms appear, which is generally in about seven or eight weeks after spawning. The straw should then be removed.

It is possible that the bed may become dry after picking of the mushrooms begins. If so a very light sprinkling of water at the same temperature as the room, with a fine nose on the watering can, should be carefully put on, avoiding as much as possible the water coming into contact with the clumps of mushrooms, which discolors them somewhat. The watering is generally done immediately after a picking. Under no circumstances must the bed be deluged.

When it is time for picking and the beds are in full bearing, the mushrooms should be picked every day, or at least, once in two days. In picking, the mushroom should be grasped by the cap, and should be twisted so that it will separate easily from the soil. This twisting disconnects any mycelium that may happen to be clinging to the base of the stipe (or stem). If they come up in large clumps and twisting cannot be practised they will have to be cut, but cutting is not to be recommended as the part of the stem left must decay and will be a source of danger. Where a mushroom has been taken out and no part of the stem left, it is well to put some soil into the cavity.

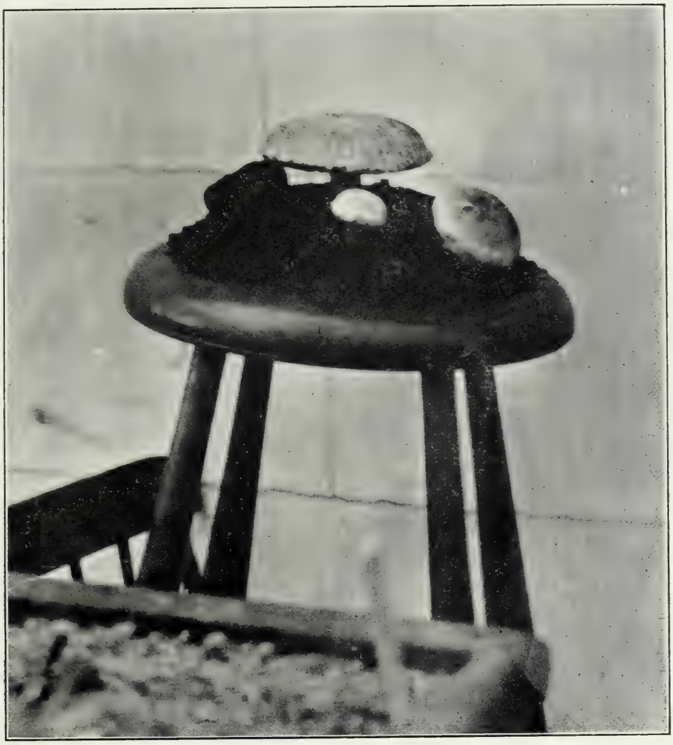
When mushrooms are gathered, they should be taken to the sorting room, where the stems are cut reasonably short and any dirt that may be on the cap brushed off. They should be put up in very attractive packages, as they are a first class and high priced product. The size of the packages depends on the class of market to which one caters. A good way in which to advertise your products is to enclose a copy of some recipes on cooking and preserving of mushrooms with each box.

The quantity of mushrooms that can be grown on a bed, is hard to estimate. Some growers say there is a profit if only half a pound per square foot is procured, but it certainly should never be less. Other growers have had about two pounds per square foot, but these have been exceptionally good crops.

I do not favor the continuation of old beds by renovation as it will not pay commercially. Another reason is that it generally harbors disease and injurious insects. When the cropping is at an end the manure is taken out and used on garden crops, and sometimes used with a mixture of loam for potting up of soft wooded cuttings.

Some sections are better adapted than others for outside culture of mushrooms. I believe it would be worth experimenting with to a limited extent to see if conditions are at all favorable. Where climatic changes are marked, the culture of this crop on a commercial scale is not recommended. It does best when there is an average temperature of from 48 to 55 degrees Fah., provided there are relatively few days when the theromometer goes as low as 32 degrees. Where drying winds prevail it is very difficult to obtain the proper degree of moisture for the best development of the crop. In growing mushroons out of doors it is advisable to use some inexpensive covering, such as straw, to protect from the drying influence of sun and wind.

There are a few enemies of the mushroom, but having provided the proper conditions for growth they should not be any great trouble to the grower.



Four stages of the mushroom. The smallest or button size suitable for soups and high class trade. The second size, broilers or roasters. The largest size used for stews and sauces. The oldest or black colored one, not suitable for food.

Part of mushroom bed in Horticultural cellar at the Agricultural College, Truro, N. S.

"Mushrooms and other fungi should be used when quite fresh."

"Mushrooms, owing to their pronounced taste, are often used to flavor other foods and are also helpful for the digestion."

"In addition to their frequently high nutritive value fungi often contain other valuable substances, such as phosphorus and lecithin."

Dr. A. Lorand.

MUSKMELON GROWING.

By Prof. W. S. Blair.

Without stopping to make any remarks about the famous Montreal melon I will at once give in brief what we consider the best method to adopt in the growing of this crop.

Three or four seeds are planted into 3 1-2 inch pots about the 25th of March. These pots are well watered and placed into a good hotbed or in the greenhouse with a temperature of about 65 degrees. After germination is completed the temperature should run around 60 degrees so as not to force the plants too much. If in the hotbed close attention should be paid to ventilation, and the plants should have full benefit of the sun. The plants are thinned to two plants to a pot after they are well established, leaving the strongest plants.

As soon as the ground is fit during the latter part of April the field is prepared by thorough deep cultivation, having been well manured the fall before. Rows are run out with a plow 10 feet apart throwing two heavy furrows each way and loosening the bottom soil again between these furrows with the third furrow. This loose soil may be thrown out with the shovel and the trench filled with good hot manure well tramped into the furrow. The bulk of manure is usually 6 inches deep and 1 foot wide. The plow is used to cover the manure, ridging the soil to the centre, leaving the dead furrow between the 10 foot rows. The frames are then placed at once in place over these rows and covered tightly. Toward the last of the first week in May these frames are ready to receive the plants which are spaced 18 inches apart, two pots to a light, right over the row of manure. After a week or ten days all the plants are cut off and but eight plants are allowed to remain to a frame. If handled in this way from pots, the plants will suffer little check from transplanting. There is a great advantage in getting the beds made up early, as this warms the soil, which is the most important thing in the early spring.

The frames require careful handling to keep the plants well ventilated and yet not chill them. The plants should be occasionally watered although every advantage should be taken of allowing rains to do this as they do much better from being watered naturally than by artificial means. The ground should be given frequent shallow cultivation with the hoe to keep down all weeds and prevent evaporation.

Late in June the vines will have filled the frames and they should be lifted to allow the vines to grow out under them. Later on, about the middle of July, the frames may be removed altogether.

The ground should be rich so that the plants may make continuous growth without a check. Plants handled in this way should give their first ripe fruit the third week in July when Montreal melons are worth about $12 per dozen.

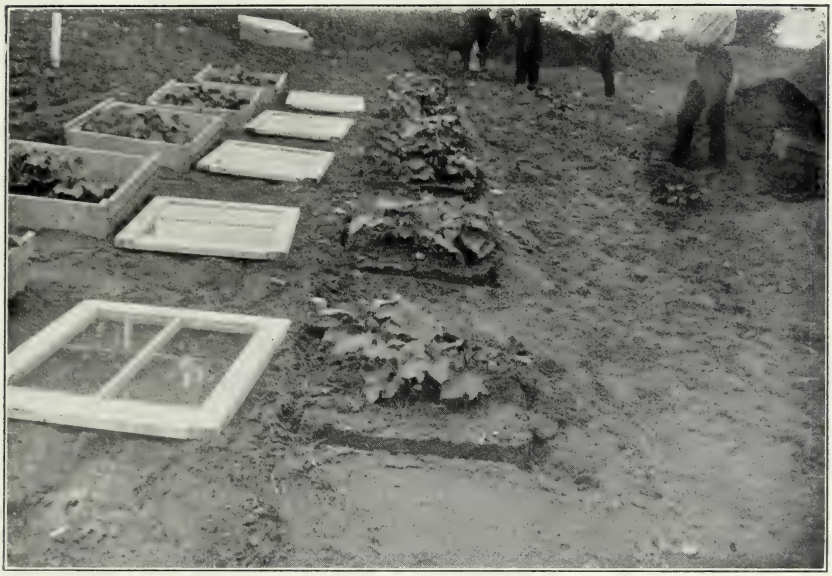
About 300 frames, 12 feet by 6 feet, with four 3 foot by 6 foot sashes are required per acre. These sashes and frames cost about $13 complete making the initial cost about $3,900 per acre.

Each frame should produce 10 good marketable melons which on the average should bring 75 cents each or equal to $7.50 per frame or $2,250 per acre. The cost of handling these frames should not exceed $500 per acre. Allowing 10 per cent for wear and general depreciation in the frames, or $390 per year, we shall have a profit of over $1,250 per acre.

After the melons become the size of cocoanuts they are turned every few days to admit of perfect development, care being taken not to injure the vine. Or, they may be placed on three small stones to permit of a ready circulation of air around the plant.

The best size for market is 8 to 12 pounds each, although sometimes they are grown to weigh 16 to 18 pounds.

It is not wise for one without experience to start melon growing on a large scale as these and many more details that go to make up successful melon growing in this country can only be fully mastered by experience in the practical handling of the crop. Thirteen 6 by 12 ft. frames grown here last year returned $118.11 or $9.16 per frame which would total $2,748 per acre.



Cucumbers showing small frame and sash used as forcing hill.

A muskmelon patch at the Fruit Experiment Station, Kentville, N. S.

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ONIONS—(*Allium Cepa*).

In Nova Scotia the consumption of onions is greater than the production. Under favorable conditions of soil and season they can be raised in this province without difficulty and when good yields are obtained they are one of the most profitable crops grown.

The onion is a hardy, cool season plant. It requires a soil rich in plant food and humus and one with the best of surface tilth. It thrives on a fine, moist, sandy loam. The land should be well drained but not too open. For convenience in tillage and to prevent washing, a level site should be selected.

When grown from seed the crop should be planted as early in the spring as possible. Since the young seedlings are delicate the very best seed bed should be provided. The preparation of the ground should therefore be started the fall before.

Onions do best on land which has been in cultivated crops for a few years previously. Freshly turned sod is apt to make them grow too much to tops and to develop thick necks or become scallions. A good crop to precede onions is carrots but they may be grown very well after such crops as corn or potatoes. The ground should be plowed deeply in the fall, harrowed and given an application of from 20 to 30 tons of stable manure per acre. This should be plowed in shallow and the ground left rough for the winter. It is a good plan to put on another coat of manure to remain on the surface all winter. In the spring the ground should be thoroughly harrowed with a spike tooth harrow, and raked off by hand, if necessary, to remove lumps, stones and litter. This preparation of the soil by the use of the harrow in the spring leaves for the seed bed the surface layer which was exposed to the weather all winter.

An application of complete high grade fertilizer at the rate of 1000 pounds per acre may be made at the time of harrowing. Or a mixture of 200 pounds of nitrate of soda, 750 pounds of acid phosphate and 250 pounds of muriate of potash may be used instead.

If the crop is to be grown from seed sown outside, the ground should be marked off for rows twelve to fourteen inches apart, and the seed sown in these to a depth of about half an inch, packing the soil well over the seed. In the earlier parts of the province on sandy land the sowing may be done in April, but in many places it can hardly be done before some time in May.

Four essentials in successful onion culture are (1) to have good seed, (2) to have the soil rich, (3) the seed bed well prepared, and (4) to keep the crop free from all weeds. A profitable crop of onions is impossible without clean culture. Hoeing and weeding must be continued nearly to the end of the growing season. All hoeing and cultivating should be shallow so as to leave the ground firm, except for the surface mulch of about one quarter of an inch or so. The loose earth should not be drawn up around the onions, giving the bulbs a chance to spread out over the surface of the ground.

In many home gardens and to some extent in market gardens, onions are grown from sets. Two advantages of this method over that of growing from seed sown outside are (1) that the crop is earlier and (2) there is less likelihood of failure through insects or unfavorable season. Sets are small onions of the previous year's growth which have developed to only three quarters of an inch or less in diameter. When planted out the following spring they quickly grow into full sized onions. They should be planted in land prepared much the same as for the crop grown from seed, in rows ten to twelve inches apart and two or three inches apart in the row.

A good method of growing onions is to sow the seed under glass in a hotbed or cold frame in March or April and transplant the seedlings to the open ground in May. This is sometimes called the New Onion Culture. This method gives an early crop. With some varieties such as Prizetaker it gives a much larger yield than when sown in the ordinary way outside. Best results are obtained if the onions are given two transplantings, the first into flats with the rows about one inch apart and the plants half an inch apart in the row. The second transplanting is from the flat to the garden or field. Since the onion at this stage transplants readily, it is not necessary to retain the soil on the roots provided the earth is made firm around them after transplanting. Sometimes the top and the roots are cut back somewhat at the time of transplanting to facilitate the handling.

Early Yellow Cracker, Early Round Yellow Danvers, Yellow Globe, Prizetaker and Adriatic Bartletta are good varieties.

One ounce of seed sows about 150 feet of drill and 3 1-2 to 5 pounds are required for an acre.

P. J. S.

PARSLEY—(*Carum Petroselinum*).

Parsley is a member of the same family as carrot. It is used for garnishing and as a flavoring for soups. It is hardy and of easy culture. The seed is very slow to germinate, taking from 15 to 25 days. It should be sown early in the spring in moist garden loam in drills one foot apart and covered very lightly. The earth should be pressed firmly over the seeds. The plants should be thinned to four inches apart. Before winter a few of the strongest plants may be lifted and set in pots or boxes in the house where they will furnish a supply of green leaves through the winter.

P. J. S.

PARSNIP—(*Pastinaca sativa*).

By John Webb.

The parsnip is a long season crop. It does well in a deep rich sandy loam.

The land should be deeply plowed in the autumn to loosen the soil and allow the long roots to go down. Select if possible a clover sod, adding a moderate dressing of barnyard manure. Manure should not be applied in the spring as this causes the roots to grow unshapely. The clover sod and manure will supply all the nitrogen needed by the parsnip.

As soon as the ground can be handled in the spring, plow it shallow and harrow until there is a fine surface. Roll the soil to make it firm. Sow the seeds in level or slightly raised drills, the drills being eighteen to twenty-four inches apart. Parsnips should be sown as early in the spring as the ground can be prepared, in some places the last of April or first part of May. The seed is slow to germinate and retains its vitality only a year or two. It should be covered about one half inch deep. As the young seedlings are delicate, the soil should be one which does not readily bake. If it should tend to form a crust over the seeds before they come up, a garden rake may be run lightly over the rows to loosen the surface soil.

The fertilizers suitable for the parsnip crop are 400 pounds of Acid phosphate and one to two hundred pounds of muriate of potash per acre. Use little nitrate of soda, not over one hundred ponuds per acre. If the crop is grown on clover sod, no nitrate will be needed. Too much ntirogen causes excessive growth of the top at the expense of roots. The fertilizer should be applied before the last harrowing so that it will be well mixed with the soil.

As soon as the plants are large enough to be seen in the rows they should be carefully cultivated to break the crust, conserve the moisture and keep down the weeds. The thinning should be done before the plants become drawn and weak, when there are two or three rough leaves. If the wireworm or cutworm is taking them, do not thin too much at first. About five or six inches apart is the proper distance to have the plants in the rows.

Parsnips for winter use should be lifted in the autumn and stored in sand in a cool place. They keep well in the ground all winter where they grew. Some people think that they are improved in quality by exposure to frost and so a part of the crop is usually left in the ground all winter and dug in the spring.

One ounce of seed sows about 200 feet of drill, or four to six pounds to the acre. Good varieties for table use are Abbott's Hollow Crowned and Student.

PEA—(*Pisum sativum*).

Peas are one of the most common garden vegetables grown in Nova Scotia. They are of easy culture and can readily be grown in any part of the province. On account of the palatability of fresh green peas and their value as food they deserve a large place in every garden. By making successional sowings and by canning, their season for use may be greatly extended.

The pea is a hardy cool season plant and thrives in a cool, moist soil, but the early crop should be planted on sandy loam. The pea is a member of the legume family and is therefore able to get some of its nitrogen from the air. But a quickly available form of nitrogen is useful in early planting to give the crop a start.

Since peas are planted early in the spring the preparation of the ground should be begun the fall before. An excess of stable manure, especially fresh manure should be avoided as it tends to cause the plants to run to vine instead of fruit. Some people prefer to use land which has been well manured for a crop the year before. The land should be deeply plowed in the fall. Early in the spring it should be harrowed with the disk and spike tooth until it is fine and mellow. A complete high grade fertilizer at the rate of five or six hundred pounds per acre may be applied at the time of harrowing, to be supplemented later by two or three hundred pounds of acid phosphate and one hundred and fifty pounds of muriate of potash, or the fertilizer may be applied in the drill at the time of planting and after the seeds are covered. It should be mixed with the soil by the use of the rake if put on in this way. If the separate chemicals are used a mixture of 125 pounds of nitrate of soda, 400 pounds of acid phosphate and 175 pounds of muriate of potash may be applied.

Peas should be planted in drills, the drills being from two and one-half to five feet apart according to the height to which the variety grows and whether the plants are to be supported or not. The earliest plantings should be made to a depth of one or two inches, the later ones three inches or more. While peas are among the earliest vegetables planted, those having wrinkled seeds are not as hardy as the smooth seeded varieties. If they are planted too early the seed is apt to rot in the ground. After the peas are up, cultivation should be frequent, some growers recommending as often as three times a week.

The pods should be harvested before the peas have hardened and the peas should be used as soon as possible after this, as they begin to deteriorate in quality soon after they have been picked. When picked in time, they are good for winter use if put up or "canned" in glass jars.

Good varieties of peas are: Alaska, First of All, Nott's Excelsior, American Wonder and Witham Wonder for early use; Gradus, Telephone, Bliss' Everbearing and Champion of England for late.

A pint of seed will sow 100 feet of drill, or one to two bushels to the acre.

P. J. S.

PEPPER—(*Capsicum annuum*).

Peppers are used in pickles and the large sweet kind for making "stuffed peppers." They belong to the same plant family as tomatoes and their culture is similar. Plants should be started in hotbeds or window boxes about the last of March. They should receive two transplantings, being planted out in the garden in June after danger of frost is past. The soil should be very rich and in good tilth. Rows should be placed eighteen inches apart with the plants about one foot apart in the row.

P. J. S.

POTATO GROWING IN CAPE BRETON.

By D. R. Nicholson.

The potato (*Solanum tuberosum*) is king of all vegetables. Wherever a noonday meal is served in palace or cottage this mealy vegetable will occupy an important place on the bill of fare.

The potato will grow on all kinds of soil, from an open sandy soil to a stiff clay, provided the latter is well drained. This vegetable, however, delights in a light loamy soil containing lots of humus. It is on land of this kind that the largest crops can be produced.

The writer has made a specialty of growing early potatoes for the Sydney market and in answer to your request will give, in a few words, a brief description of methods that with us at least have given satisfactory results.

To begin with the preparation of the soil, we prefer a clover sod from which only one crop of hay has been cut. This we plow shallow about September first, as by this time a good aftermath of clover has come up. We like to plow early enough to get the sod well rotted before frost. To this end we roll the land after plowing with a heavy roller and later use the harrow at least once in every ten days and oftener provided there is much couch grass in the soil.

If the sod is strong and there is a heavy growth of couch, we would cross plow just before frost, and throw it up as roughly as possible to give the frost every advantage to work on soil and couch.

If manure is plentiful in the autumn, we would top dress before the first plowing if it is done shallow, otherwise after plowing, using the disc harrow to work it in. For early potatoes we apply from 12 to 15 two-horse loads per acre.

In the spring we plan to prepare the seed long before the soil is in shape to work. The tubers are picked over and put in a sunny location with a view of obtaining good strong sprouts.

As early in May as possible the land is well disced and afterward smoothed with the spring tooth harrow. If manure has been applied in the autumn (which is the better plan) the land is now ready for planting.

There is a difference of opinion as to planting the sets in drills or plowing then in every third furrow. Since we started to use a potato digger we always plant in drills and for the past two seasons we have used an Iron Age Potato Planter, which has given perfect satisfaction. This machine requires a boy, besides the driver, whose duties are to correct doubles and misses. It does perfect work in every particular, opens the row, spreads the fertilizer, drops the sets, covers them, makes a nice drill and marks the next row all at one passage.

On our soil we use a 10 per cent. potash fertilizer and find that it gives very much better results than one containing only five or six per cent.

On land that has received 12 to 15 two-horse loads of barnyard manure in autumn or spring just before planting we use 1000 lbs. of this prepared fertilizer. On land that is naturally rich in potash results equally as good may be obtained by using a cheaper grade of fertilizer. One has to do some experimenting on his own account to determine what the soil actually requires.

The sets we place in the row 14 to 17 inches apart; fourteen inches for early and seventeen inches for late varieties and the rows thirty inches apart.

We never plant whole potatoes but prefer the cut seed leaving two good strong sprouts to each piece.

The planting done only means that work is just begun. To insure a good crop of tubers the ground must be kept free from weeds and the surface soil kept loose with the use of the horse hoe.

Land that is badly infested with weeds is more difficult to keep clean of weeds when planting is done in drills than when the seed is plowed in, in the usual manner.

The plan we have adopted works very well and is as follows:—Three weeks after planting has been done we run a drill plow (double mould board) between the rows throwing them up sharp. This smothers all weeds that have germinated and gives an opportunity to others to do likewise. A few days later we run a Hallock Weeder (which takes four drills at once passage) over the raised drills and level them down to their normal size. By this time the tops are beginning to break ground and in a few days the whole field is a thing of beauty as the young tops break ground much more uniformly when the seed is planted in drills. By this method the soil is perfectly free of weeds when the first tops appear and with the constant use of the cultivator there is no difficulty in keeping the field perfectly clean throughout the entire season.

We cultivate as long as the team can pass between the rows and with the last passage we use the long hillers on the horse hoe and ridge up the row. This supports the vines, keeps the tubers from getting sun burnt and makes digging easier.

With this method we have had potatoes on the market six weeks after the tops appeared above ground. The variety we plant exclusively for the early market is the Early Eureka.

From a two acre field of this variety this season we marketed 630 bushels of potatoes before August 27th. Had the crop been allowed to mature it is difficult to imagine what the results might have been.

We use Bordeaux mixture on our late potatoes to prevent blight and at the same time apply Paris green to get rid of the troublesome "bug."

There are thousands of bushels of potatoes imported into Sydney annually from Prince Edward Island. We have within ten miles of the city hundreds of acres of land lying idle, which, with proper cultivation, is capable of producing 300 bushels of potatoes per acre.

And what of the young men who should be tillers of this soil? Alas! far too many of them are eking out only a bare existence in city or town while the brother farmer is living on the fat of the land and accumulating a property that will be a valuable asset in his old age.

Certain fruits and vegetables are noticeably very rich, not only in lime, but also in iron; such are strawberries, Malaga or California grapes, peas, potatoes, etc.

If not rich in lime yet on the other hand rich in iron, are certain vegetables and fruits, such as spinach, asparagus, the outer leaves of cabbages, etc.

As it is very probable that organic iron is more easily assimilated than inorganic, it would be advisable in those cases which require a better nutrition of the blood and an increase of its contents in iron, to give plentifully the above named vegetables and fruits.

There can be no doubt that the above named fruits and vegetables—let us not omit the important potato—are able to do us good service in the prevention and treatment of acid intoxication that we find in severe forms of diabetes or in serious disorders of the liver; but also in acid diathesis they can render valuable assitance.

Dr. A. Lorand.

PUMPKIN—(*Cucurbita Pepo*).

The culture of pumpkins is similar to that of squash, which see. It is grown for cooking purposes, chiefly for making pies, and for stock feeding. It is grown successfully as a companion crop with corn and potatoes, in which case the ground should be rich to support the two crops.

P. J. S.

RADISH—(*Raphanus sativus*).

By J. R. Dickson.

Radish is a vegetable the roots of which are eaten uncooked. It has a short season of growth, maturing in the open in from four to six weeks, and perfers a cool situation. It is generally treated in the garden as a companion crop. It is also forced under glass during the period from fall to spring.

Outdoor Crop.

The seed of the spring varieties is sown thinly in the garden where the crop is to mature, in drills 12 inches apart, or between the rows to be subsequently occupied by some later maturing crop, at a depth of about half an inch. Make the first sowing in the spring as soon as the ground is in good shape and keep up a succession every two or three weeks thereafter. Discontinue during summer, but sowings may be resumed in August for the fall crops. Still sow the spring varieties. Thin out to two or four inches in the drills, according as the turnip or the long rooted varieties are used. Pull for the market immediately when they mature, as they soon become pithy, bitter and stringy.

The soil that best suits this crop is a light, warm, well manured, sandy loam, with plenty of readily available fertility. Quick and continuous growth is essential for obtaining best results. For the later crops use cooler ground.

Forcing Crop.

Radishes may be forced in heated greenhouses—in solid beds or raised benches—from October to April and also in hotbeds in late fall and early spring.

The soil or compost for forcing is made up of the following:—three parts of well rotted turf from a light sandy loam and one part of well rotted manure, thoroughly mixed up together. This compost is placed in the beds or benches' or on the hotbed manure to a depth of four to six inches—the former for the turnip rooted sorts and the latter for the long rooted. In the benches inverted sods or ashes should be first put in to give the necessary drainage. Pack the soil moderately firm. Sow the seed in drills four to six inches apart according to variety, at a depth of one quarter to one half an inch, dropping two or three seeds every half inch or so in the drills. The soil should be moist, and should be watered if necessary before sowing. Ten to fourteen days after sowing, when the seed leaves are well formed, thin out to two inches apart. Cultivate occasionally and keep the soil free from weeds. Water as freely and as often as is needful, but carefully. The atmosphere should be moist, and the temperature by day should run from 65 to 70 degrees, and at night from 45 to 50 degrees. The radishes must have plenty of light, but not much bottom heat is required—otherwise they are liable to run to top. The ideal place for the crop is a hotbed which is nearly spent,—e. g. one which has just grown a crop of lettuce. This gives all the bottom heat required. If the bench soil is six inches deep, it will last the whole forcing season. If four inches, work in a small quantity of manure after each crop is removed.

Use only large seed and so give the radishes every chance to mature at the same time.

Good varieties:—outdoor, Icicle, with long white roots; Ne Plus Ultra, turnip rooted scarlet, good for forcing; Beckert's Chartier, rose color and white, long rooted.

One ounce of seed sows 100 feet of drill, or 10 lbs. to the acre.

RHUBARB AN IMPORTANT ADJUNCT TO A HOME GARDEN.

By E. E. Archibald.

Why grow it?

The ease with which this plant can be grown in any part of Nova Scotia—and I might almost say in any part of Canada, is answer No. 1. Its coming to us as almost the first fruits of early spring garden crops—No. 2. The many forms in which a skillful house-wife can serve it up as the climax of a first class bill of fare, for spring and early summer—No. 3. The health giving tonic qualities of the plant itself when freely used in any or all of the common forms—"sauce," "dumpling," "pie" or "preserves,"—No. 4.

In this commercial age almost the first question asked about anything is, "does it pay?" My answer as applied to growing rhubarb is, yes. It pays to buy it in its season for five cents a pound rather than do without it; but it can be grown if started right for one half that price.

How to grow it.

The planting of roots can be done in either fall or spring. The fall is, by many, considered preferable. The slope, north or south, is not an important factor, nor is that of the richness of the soil. Dig a trench about 18 inches deep, and as wide. Fill with well rotted stable manure to a depth of twelve inches tramping well down. Plant your selected roots from 2½ to 3 feet apart filling up with rotted manure and earth, tramping well to the top, leaving a level surface.

I might say just here that a first requisite to any garden, is a well drained seed bed. Rhubarb is more insistent on this condition than many other garden plants.

Selection of Stock.

Order from a reliable grower, plants from his largest and reddest "Mammoth" specimens, one good bud to a root will do, as it will soon multiply. The "Strawberry" variety is smaller and more delicate; but no plot is complete without some of this variety.

Winter Treatment.

When the ground is well frozen, cover it all over with good strong stable manure, not less than six inches deep, and no further attention is needed until after the following season's crop is pulled. Do not be alarmed that it will not push its way up through the six inches of manure. It is sure to come, and you have at once the tenderest, best possible cuttings.

A Warning.

Keep your neighbor's hens off the rhubarb plot. The extra stable manure makes a fancy scratching ground, and hens will go to the bottom for insects, destroying the tender full buds all ready for the next season's crop. I have had otherwise well cared for rhubarb ruined in the above way.

"A neighbor's garden: then a hen,
The hen was glad; the neighbors mad,
The brick was red; the hen was dead."

Your own hens are just as dangerous.

The above may look quite impracticable and expensive, but I assure you it is not. A small planting will give all a family will use; and if started as I have indicated, nothing grown in the garden for food will give better results for the same cost for cultivation.

SALSIFY (*Tragopogon ponifolius*) OR VEGETABLE OYSTER.

Its Cultivation and Use.

By James Allan.

Salsify is a native of Europe. It is a biennial, having a fleshy tap root, about eight to twelve inches in length, with a diameter of an inch or more. In appearance it resembles the parsnip, being somewhat smaller.

The seed is rather light in weight, long and pointed at each end and stick-like in appearance. It retains its germinating power for two years and sometimes longer. The ground should be prepared the fall before, loosening the soil with the plow to a depth of eight inches or more. Fresh manure should not be used the same season as the crop is grown. It causes the roots to grow rough and forked. The seed should be sown as early in the spring as the ground can be worked, as this is a long season crop. The drills should be from twelve to fourteen inches apart and the plants thinned to about four inches in the row. The cultivator and hoe should be frequently used to prevent the growth of weeds and to make and retain a soil mulch for holding the moisture. This crop requires an abundance of moisture, but should not be grown on land that is water-logged and sour.

The roots reach full size in October. Part of the crop may be harvested then for fall and winter use, the rest remaining in the ground all winter the same as parsnips. The winter supply should be stored in a cool cellar and be covered with sand.

Salsify is not as generally grown as it should be. It is not a difficult crop to raise and has a delicate and delicious flavor. When properly cooked the flavor somewhat resembles that of oysters from which it gets the name of vegetable oyster.

One ounce of seed is required for seventy feet of drill, or about eight to ten pounds to the acre.

CULTIVATION OF SPINACH.

By James Allan.

Spinach (Spinacea oleracea) is a plant grown for greens or as a pot herb. Being one of the cool season crops, it is grown in early spring and fall, for if sown during the hot months of a dry summer it will go very rapidly to seed, which makes the foliage or part that is used, rather tough and strong tasting.

To grow a successful crop from spring sowing, the land should be well prepared the fall before with a very liberal dressing of decayed manure, plowing the land shallow. As soon as the ground can be handled in the spring, it should be well worked up and pulverized. On well managed truck farms sometimes spinach is grown as a companion crop, that is it is grown between the rows of crops which require a longer period of growth to mature. In this way the whole space is better utilized and the spinach is harvested before the late maturing crop requires the room. Then again, it may be grown as a succession crop, following some early crop that has been harvested earlier in the season, as spinach occupies the land but a very small portion of the year.

If the crop is not grown by either of the above methods, it may be sown rather thin, about 1-2 inch deep, in rows from 10 to 20 inches apart, according to the method of cultivation. If cultivated by hand, 10 inches would be far enough apart, and having it at that distance would mean a much heavier crop.

Should the land seem to be in poor heart or not as active as one might like it, a surface application of quickly available fertilizer, one which is very rich in nitrogen, will be found very beneficial. This can be obtained from the use of nitrate of soda or sulphate of ammonia, using about 100 to 200 lbs. per acre each time, giving two or more applications in a season of growth.

The varieties that are mostly used are the round thick leaved for early spring, and it may be followed with a successional sowing of Long Standing which gets its name from the fact that it will stand longer in the ground, without going to seed. The Savoy leaved is another, which has very good flavor, but is not as commonly grown.

If one wishes to have spinach during the summer, it is best to grow the variety known as New Zealand spinach (Tetragonia expansa) which is a warm weather plant. This variety is but very little grown and is not related to the ordinary spinach. It resembles the taste of spinach very much but is a little tougher and therefore takes a little nore time to cook. It is very easily grown and should be in more common use. Sow the seed in drills two feet apart and thin to about 15 inches apart in the drill.

Another of our pot herbs used in the same way as spinach is Swiss Chard. This plant is very easily grown and can be kept on growing through the summer. The green part of the leaves is used as greens.

Plant diseases and insect pests are very uncommon in the growth of Spinach.

All animals which receive food containing but little iron become anaemic.

Of all kinds of food used at present, spinach and the yolk of eggs contain the most iron.

"Spinach is in general very easily digested, for this it is necessary that the spinach be prepared in a smooth puree, and not served with the leaves, as is the custom in some countries, in which form it is less digestible. It absorbs large amounts of fat. By the addition of eggs the nutritive value is increased. A very practical method and one of much of value is to add the yolks of two eggs to the spinach, stirring them in, this also greatly improves the taste."

Vegetables are thus a valuable aid in the prevention of constipation, and of these the following are the best—spinach, carrots, green beans, and boiled lettuce, taking into consideration their action as laxative foods. Cabbage also acts well as a bulky food.

Dr. A. Lorand.

SQUASH—(*Cucurbita maxima, Pepo, moschata*).

Squash, along with the pumpkin, cucumber and melon, belongs to the gourd family. These gourds are tender short season crops. They thrive in a light, warm, rich soil. Everything possible should be done to give the plants a quick early start. With this in view the ground should be well prepared, plowing deeply the fall before. In the spring the ground should be harrowed several times at intervals of a week or ten days to improve the tilth and conserve the moisture. Squash should be planted in hills eight to ten feet apart. The hills are prepared by mixing a shovelful or two of well rotted manure with the soil and adding a handful of commercial fertilizer at the same time. Plant about eight seeds to each hill and thin to three or four of the best plants after danger from insects is past.

While squash require a light, warm soil, they also need plenty of moisture. A supply of soil moisture is provided by deep fall plowing and by adding humus. It is afterwards conserved by frequent tillage both before and after the crop is planted. Cultivation during the early growth of the crop should be frequent enough to prevent the formation of a crust and to keep the surface soil loose and open. This may require the use of the harrow or cultivator once or even twice a week until the vines begin to cover the ground. In large areas hand labor can be saved by arranging the hills to allow of cultivation lengthwise and crosswise of the field. For an early crop, or if the season is too short for full development, it is well to start the plants under glass and to transplant to the gardens as with cucumbers and melons.

The crop should be harvested before it is touched by heavy frost. To keep well, squash should be handled carefully to avoid bruising and breaking off the stems. They should be stored on racks in a warm, dry place with a temperature not below fifty degrees.

Good varieties are,—Summer Crookneck, Early Mammoth White Bush for early use. These may be planted closer than the running varieties, the hills about four or five feet apart. Boston Marrow for fall, and Hubbard, Delicious and Golden Bronze for winter.

One ounce of seed plants fifty hills of the early kinds and eighteen to twenty hills of the latter. Two or two and one-half pounds are required for an acre.

P. J. S.

TOMATO—(*Lycopersicum esculentum*).

By A. Grevatt.

Up to a few years ago, the growing of tomatoes in the Annapolis Valley was engaged in, as a business, by a very limited number of persons. In recent years, however, the use of the vegetable has become more common, and it is now, in fact, an absolute necessity to very many. Noting this, many persons have engaged in the business and have built for themselves small glass structures, or green houses, in which the plants are started, to be transferred, when danger of frost is over, to the open field. In almost every case these persons have received a reasonable return for this trouble and expense. In growing tomatoes the first thing to be considered is the seed. This must be obtained from a trustworthy seedsman. My experience is, that good seed can be obtained from almost any seed store in the upper provinces. If kept dry, and at an even temperature, this seed will remain good, and will germinate freely until two or three years old.

The varieties which I grow chiefly are Earliana, Chalk's Early Jewel, Dominion Day, Ignotum, Early Ruby. My preference is for the Earliana. That variety has a tendency though to blight early in the season, thus making its season short for good fruit. For main crop I plant Dominion Day. They are all of good size, round, firm and of fine flavor. In bad season they are liable to decay

Tomato plants pricked out in a flat and strawberry boxes and grown on for planting out.

Interior of a lettuce house at Berwick, N. S.

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in the centre but I have always found them to fruit well, remain firm and withstand blight better than any other variety which I have grown here, thus making an exceptionally good tomato for market. In ripening, they are usually ten days or so later than Earliana, though I have had them ripen as early as that variety. I begin to sow the seed the first week in March, and sow again after an interval of six days, continuing at such intervals until the sowing season is over. These intervals are necessary when sowing large quantities, as otherwise it will be impossible to attend to the plants properly at the transplanting season. The young plants grow very rapidly in the seed bed, especially if forced by heat.

My tomato plants last year were grown in a greenhouse, without any artificial heat whatever. Benches, eight inches deep, were filled with good compost, upon which the seed was sown. My experience is that plants grown thus are stronger and healthier than are those forced by artificial heat. They must not be neglected however. As in every other business, the grower must be on the alert if he would be successful. When the temperature falls, a light covering must be applied to protect from frost. I use sacking now for all my coverings. If the greenhouse is tight, however, there is little danger. Hotbeds outside should be covered every night, as there is very little air space above the plants.

The transplanting comes next. It should be done as soon as the true leaf appears. This is the most critical period in the early life of the plant. Sometimes there is a spell of gloomy weather, which means disaster unless great care is exercised in watering. Newly transplanted plants should have no more water than will pack the earth well around the roots and start them to grow. They must be cultivated often and air must be given frequently or they will be overtaken by that spider-like appearance commonly called damping-off, and the plants will die. I have seen thousands die in one night. Shading, airing and keeping an even temperature of about 55 degrees will reduce the trouble to a minimum.

When the plants are ready to harden off, put them out first on a fine day without much wind. Keep them covered for the first day or two, taking away the covers gradually, replacing them when the nights are cold. The ends of the cold frames should be made to lift out in order to secure a current of air through the stems of the plants thus avoiding a spindling, weak growth. Up to this time my plants have never had any manure, other than the compost. This I make for them every year. It consists of load for load of good sods, black muck and manure; each load as thrown upon the heap is covered with a sprinkling of unslaked lime. This compost is used for many plants, other than tomatoes. In selecting a plot for tomatoes, I prefer greensward, plowed deep in the fall, and broken up well in the spring. The land must be in good heart, but not too rich. If the land is over-rich or freshly manured the plants will produce an excessive growth of vines, and there will be little or no ripe fruit, as the ripening season here is very short, and always liable to be brought to an end by an early frost. My method of planting is to set a horse hoe, eighteen inches wide and to plant every other furrow made therewith, thus making the rows of plants three feet apart and giving plenty of good soil to use in covering in. I put plants of early varieties two feet apart in the row, and of later varieties thirty inches apart, putting a handful of good fertilizer to each two plants.

The land should be cultivated as soon as the plants are in the ground and cultivated two or three times a week until the plants have grown so that the horse cannot go through the rows at all.

Without careful cultivation, tomatoes simply cannot be grown successfully. If the plants once become stunted, they will never recover, but will develop disease and die before maturity. In my own neighborhood I saw, last season, a plot of 7,000 good plants upon good land and well fertilized, but they were not cultivated for two weeks after being set out. These plants did not ripen any fruit until nearly three weeks after other growers had their product upon the market, and the prices were away down. I would earnestly try to impress upon every person trying to grow tomatoes the importance of keeping the cultivator at work, even if the hoeing has to be neglected a little. I give one or two dressings of nitrate of soda when the first blossoms have set. If given before, the plant is likely to grow too vigorous and rank, thus again shortening the ripening period.

In marketing, the first shipments are eagerly looked for. The first fruits are, without doubt, the choicest, and bring the highest prices. The best prices that I have obtained during the past six years is one dollar per eight quart basket, about twelve pounds, but high prices are never long maintained, as Ontario growers ship large quantities into our eastern cities, and soon bring down the prices. Our own ripening crops must be disposed o and occasionally the market becomes glutted. Where no canning factories exist, there is no alternative but to leave the tomatoes upon the ground until the market improves, which usually is but a few days.

In the year 1906 I cleared from one acre of tomatoes $420., which I considered a good return for my investment. In reckoning a field of tomatoes I usually allow 4,000 plants to an acre and four plants to a basket of fruit. The average price received is forty cents a basket. The cost of production, of baskets, and shipping expenses is fifteen cents per basket leaving a profit of twenty-five cents per basket, or a net return of $250 from an acre of tomatoes. This is a fair return. It can be secured by anyone who will look carefully after his plants at all stages of their growth.

My output of tomato plants alone last year was 65,000 besides thousands of other plants. Should any one who reads this article find it convenient to visit the Berwick Nurseries, I should be pleased at any time to show him thousands of plants in the different stages of their life and also to show the owners of greenhouses without artificial heat, that, in the growing of good healthy tomato plants the old fashioned way is absolutely unnecessary.

TURNIPS.

By H. S. Cunningham.

Of all our garden vegetables, turnips are perhaps the most easily grown. They can be grown successfully in almost any kind of soil, although a deep sandy loam is preferable. The land should be plowed quite deeply the previous fall, but if conditions are such as to permit having it plowed early it would be better to plow shallow the first time. After plowing, harrow with a spike tooth harrow at short intervals plowing again deeply as late as possible before the frost stops operations. The extra working in the fall would start the growth of weeds and destroy a large number which would otherwise be a source of trouble throughout the growing season.

In the spring a medium dressing of well rotted barnyard manure, say 15 tons per acre, should be applied. Harrow well, preferably with a disk, and plow again. Harrow well with a spike tooth after the second plowing and the land is ready to drill.

Commercial fertilizers should be applied at the time of seeding, sown either broadcast or in drills, the latter method being better. One hundred pounds of nitrate of soda, 100 of muriate of potash and 500 to 600 of acid phosphate per acre is a very good mixture for this crop. In sowing the fertilizer in drills a shallow furrow is first made with the plow and the fertilizer is sown in this. A ridge is made by covering in the fertilizer and the drill is made in this ridge.

In garden operations the drills should be about 18 inches apart but in field operations they may be 28 inches.

After the ridges are formed they should be lightly raked off on top when a shallow drill may be made to receive the seed. After the seed is sown, it can be covered lightly, by using the back of the rake.

As soon as the plants have their third leaf well developed, they should be thinned, leaving single plants from 12 to 14 inches apart in the rows. Cultivation should start as soon as the plants are well through the ground and be continued two or three times a week all through the growing season or until the plants are too large to allow the cultivator to pass between the drills. Constant cultivation will conserve the moisture, destroy the weeds, keep the plants growing and ensure a crop of roots of good quality, free from woodiness.

By sowing some of the earlier varieties first, which would be ready for use in from four to six weeks after sowing, and sowing Ruta Bagas (or Swedish Turnips) after the first crop is harvested it would be possible to get two crops in the same season. Ruta Bagas will give good results when sown as late as the first week in July.

One ounce of seed sows 200 to 300 feet of drill, or one pound to the acre.

SWEET HERBS.

No garden is complete without its bed of sweet herbs. The commonest of these are sage, savory (summer and winter), thyme, marjoram and spearmint. A full list would include anise, angelica, balm, basil, caraway, catnip, coriander, dill, fennel, horehound, hyssop, marigold, parsley, peppermint, samphire and tarragon. Some of these, as anise and coriander are annuals, the seed having to be sown every year. Others, such as sage and thyme are perennials and will continue to grow for several years. All can be grown from seeds sown either in the open or under glass and afterwards transplanted to the garden. The perennials may be grown from cuttings or by division of the roots.

The culture of the sweet herbs is easy. Select a warm site with fine, well drained soil in a corner of the garden or along the border. Sow the seeds, or transplant the plants in rows twelve to eighteen inches apart in April or May. The plants should stand about ten inches apart in the row. Give the usual cultivation necessary to conserve the moisture and to keep down the weeds. Make cuttings of those which are grown for their leaves before the blossoms appear or are fully opened. The young leaves of sage are much better used fresh, as when dried they lose much of their aroma. In drying, the leaves should be placed in an airy room, either loosely on the floor or suspended from above and dried as quickly as possible. After being dried they should be kept in a tightly closed vessel to retain their strength.

The perennial herbs should be given some winter protection of straw or brush. Plants which have been much weakened or killed by repeated cutting or by severe winters should be replaced by new ones.

P. J. S.

INSECTS INJURIOUS TO VEGETABLES.

By Dr. R. Matheson.

Nearly all our garden crops are subject to attack by various species of insects. This is especially true when we consider the vegetables commonly grown in our gardens. Owing to the lack of facilities for combating these pests the average farmer or small gardener allows his enemies to exact a heavy toll each year, in many cases completely ruining his crop. Unfortunately, some of these insects are very difficult to control and it requires ingenuity, time and much patience to get ahead of these ever present foes. The methods to be employed will depend largely, if not altogether, on the kind of crop, the area planted, and the available labor. It is essential that care be exercised not only in the selection of land to be planted but also in observing the first signs of injury. So often the insect attack can be promptly checked if the proper measures are taken at once while if too late the damage may be so great that no measures will save the crop.

The following methods are usually employed in combating our insect enemies, the one to be used in any given case depending on the insect pest and the crop attacked. As these various methods will be referred to so often it will be well to explain them fully here.

(1) **Farming Practices.** These consist in the proper selection of the place and time for planting; the maintenance of vigorous growth by proper cultivation; the proper rotation and diversification of crops: fall plowing and clean cultivation; and finally constant inspection of growing crops so as to be ready to apply remedies promptly.

Sod land or newly broken in land should not as a rule be planted to vegetables which are subject to attack by cutworms or white grubs. Early or late planting may in many cases prove the salvation of a crop. One must be alert and know what insects he has to fear, otherwise he is constantly working in the dark. The maintenance of vigorous growth by cultivation or application of fertilizers often results in overcoming the insect foes. The proper rotation of crops is essential. It is beneficial to the land and so frequently prevents ravages from insect pests or fungous diseases. Crops closely related botanically, as cabbage and cauliflower, and much subject to insect attack should not follow one another in successive years. Clean cultivation consists not only in keeping down weeds in fields but also in the destruction of the weeds so commonly allowed to grow in all luxuriance in the fence rows and around buildings. Fall plowing exposes many insects to the cold and their natural enemies, as birds and mammals, This is particularly true of such insects as white grubs, wireworms, etc., which hibernate near the surface of the soil.

(2) **Mechanical Methods.** These consist of hand picking for the large conspicuous insects or where but few plants are grown; jarring or beating insects from low plants into flat pans containing kerosene oil; trapping under boards, shingles, chips, etc.,. for squash bugs, cutworms, etc. Some of these methods may be successfully employed and must be determined according to circumstances.

(3) **The Use of Insecticides.** This is the most common of all methods now employed. Insecticides are divided into two great classes:—(a) stomach or internal poisons; (b) external or contact poisons. Whether an internal or external poison is used depends upon the insect to be controlled. Only those insects which have mouth parts suited for chewing or biting may be reached by internal poisons, while sucking insects, those that pierce the plant tissues and suck up the juices, must be fought by insecticides which kill by coming in contact with their bodies.

In order to use any insecticide, farm practice or mechanical method intelligently, it is first essential to know the pest you are trying to control,—know its life-history, its habits, etc. Only by such knowledge combined with constant vigilance can one determine when and how and what to apply in the form of an insecticide or what farm practice to select and when. No amount of cultivation applied at the wrong time, no rotation of crops which is not selected intelligently, no amount of simply spraying because some one says to spray will be of any avail in this war against our insect foes. In the phrase of the street, it is up to the present day gardener, fruit grower or farmer to exercise his wits, study his conditions and face his problems with an ever widening knowledge. The more farm produce grown, the more rapidly do insect foes increase, hence the greater damage wrought unless we act co-operatively and intelligently.

INSECTICIDES.

But a few of the present day insecticides can be listed here. Only those that by long usage have proved themselves effective should be employed. Always exercise the greatest care in selecting the one to use and go very slowly in trying out any new one. Avoid nostrums, quack remedies or patented preparations unless some honorable firm is behind them and you can rely on their word.

Internal or Stomach Poisons.

1. **Paris Green.** This is still one of the most valuable of all internal poisons used against insects. It may be used either as a spray or dry, the former being the cheaper and usually more effective. Use only a guaranteed brand, containing at least 50 per cent. arsenious oxide with not more than three and one-half per cent. of it in water soluble form. When used as a spray it does not go into solution but its fine particles are held in suspension in the water, so care should be exercised in keeping the spray material constantly agitated.

Applied dry it should be mixed with from ten to twenty parts flour, plaster or lime. Apply when the dew is on or after a shower by means of a powder gun or the so-called dust-spray machines, or any other method which will insure the covering of the plants.

2. **Lead Arsenate.** This is now used extensively instead of Paris green on account of its being less harmful to growing plants, its better adhesive qualities and as it can be used in combination with several contact insecticides. Lead Arsenate can be prepared by combining lead acetate (7 parts) with arsenate of soda (3 parts), or it can be purchased in the form of a paste or powder. It is sold by many large and responsible firms and the manufactured product is first class in every way.

3. **Hellebore.** This is less dangerous than the arsenical poisons and many prefer to use it on vegetables which are soon to be eaten. However, it has been shown that one would have to eat over twenty cabbages dusted in the ordinary way with Paris green at one meal in order to produce poisonous effects. As all vegetables should be thoroughly washed before eating there is no danger from the use of arsenicals. Hellebore may be used dry or as a spray. As a spray use two to four ounces to two gallons of water.

Combinations of Arsenicals and Fungicides. Paris green, lead arsenate and the other arsenicals may be used in connection with some fungicide, so that both insects and plant diseases may be combated at the same time. Add them directly to bordeaux mixture as if the bordeaux were plain water. Arsenate of lead may be used with lime-sulphur but the addition of Paris green will cause burning. Always add Paris green to Bordeaux, as the free lime will combine with any free arsenic and render it harmless. In using Paris green alone, add 1 lb. of good lime to every pound of Paris green so as to prevent burning.

Contact Insecticides.

1. **Kerosene Emulsion** is one of the standard remedies for sucking insects such as plant lice. A stock solution may be prepared as follows:—

Water	1 gal.
Soap (any good soap)	½ lb.
Kerosene oil	2 gals.

Dissolve the soap in hot water, remove from fire and while still hot add the kerosene. Stir vigorously or pump the liquid back into itself until a creamy mass is formed. If properly made the oil should not separate out on cooling.

For use on dormant trees dilute with five to seven parts water. For killing plant lice on foliage dilute with 10 to 15 parts water. As recommendations are made frequently on the percentage of oil in the liquid, the following dilution table will be of service:—

10% Emulsion add 17 gals. water to 3 gals. stock solution.
15% Emulsion add 10 gals. water to 3 gals. stock solution.
20% Emulsion add 7 gals. water to 3 gals. stock solution.
25% Emulsion add 5 gals. water to 3 gals. stock solution.

2. **Soap.** Ordinary laundry soap, 1 lb. dissolved in five or six gallons of water is a good insecticide. Apply as a spray or swab on the plants. Soft soap should be used twice as strong. This is very effective for plant lice on small garden plants.

3. **Tobacco Extracts.** These are put on the market by manufacturers and several good brands can be secured. "Black-leaf 40" tobacco extract and black-leaf extract give good results. The former is diluted at the rate of one gallon to 800–1000 gallons water, making cost of spray

about one and one-half cents per gallon. It can be purchased in small cans and a small quantity is sufficient on account of the great dilution. Full directions are given on each can. The black-leaf extract is diluted at the rate of one gallon to 65 or 70 gallons water. These extracts can be combined with lime-sluphur. It is well to follow manufacturers directions when using these preparations. They are excellent for controlling plant lice as well as many other insects.

Baits. Several of these are now in use against cutworms, wireworms and grasshoppers. The most common one is the poison bran mash prepared as follows:—1 pound Paris green mixed with 25 pounds bran or middlings. Add 2 quarts cheap molasses to a gallon of water and moisten the bran, stirring thoroughly until it makes a stiff mash. Do not make the mash too soft but add sufficient water to thoroughly moisten the mixture. For use against cutworms apply a heaping tablespoonful near each plant. Cover with chips or shingles so as to keep the mass moist and it will last several days. For large fields badly infested with cutworms apply in rows across the fields before planting and as near evening as possible.

SPRAY APPARATUS.

In order to secure results from an insecticide it is essential to prepare it properly or buy a good brand, apply it at the right time under proper conditions and with a first class spray outfit. Such an outfit may cost very little where one has but a few plants to spray or one may need the latest power spray equipments. One can secure to-day almost any kind of a spray outfit.

1. The Knapsack Sprayer. This is strapped on the back of the operator. Various kinds are manufactured and some are quite usable.

2. Bucket Pumps. These may be purchased at from $6.00 to $8.00 and are very useful in gardens and small orchards.

3. Barrel Pumps. These consist of a large force pump mounted in a barrel which may be placed on a sled or used on wheels. One or several leads of hose may be used, depending on the power behind the pump handle. Various kinds are on the market and one should consult the latest catalogues of the more reputable manufacturers.

4. Power Sprayers of various kinds can be obtained. These are expensive and are usually not required in the ordinary vegetable gardens.

Nozzles. Secure a good nozzle, one that throws a fine spray and will stand hard usage. Get the nozzle with an angle so that you can spray under leaves which is so essential with vegetable crops. The Vermorel, disk type, and Bordeaux nozzles are all good types of nozzles. Always apply the spray with a good pressure, 75 to 100 pounds and be sure the work is done thoroughly.

GENERAL VEGETABLE PESTS.

Here may be listed those pests that attack a number of different plants.

Earthworms. Where too abundant and annoying in gardens, they may be destroyed by the use of lime-water applied to the soil.

Cutworms. These are the most troublesome pests with which the gardener has to deal. They are the caterpillars of owlet moths which fly at night and are often attracted to lights. The cutworms are familiar to all as robust, soft-bodied, nearly smooth, pale gray to almost black, more or less spotted or striped caterpillars, usually noticed only in early spring and summer. Their presence is readily detected by finding young plants cut off near the surface of the ground. The culprit will be found curled up during the day, resting concealed in the earth near the plants. They may also be found under small chips, boards, stones or other debris.

There are many species of cutworms so that no general life-history can be given. However, the following generalizations hold good. The eggs are laid by the moths during midsummer on weeds, succulent vegetation, shrubs, grasses, etc. Many of them hibernate in the soil as half-grown caterpillars, others winter in the egg state, some as pupae or as adults. In the spring they attack the tender plants and may do very great damage.

Treatment. Clean cultivation is a good preventive. Destroy all weeds; burn or plow under all left over refuse. Fall plowing will expose many of the hibernating caterpillars to their enemies. In setting out plants, as cabbages, tomatoes, etc., encircle the stems with heavy paper or tin to several inches below as well as above the surface of the soil. The most common method now employed is **poisoned baits,** such as the bran mash mixed with Paris green. Apply near the bases of the plants or scatter in rows across the fields before setting out plants or shortly after seeding. This should be done as near sundown as possible and where practicable, cover the bran with chips, shingles, flat stones, etc., so as to keep it moist. In small gardens, it is often cheaper to examine each plant and dig out the cut worms. Do this as often as any injury is noticed.

White Grubs or June Beetles. The white grubs, the larvae of the common June Beetles, often do considerable damage and each year their presence may be noted. There are very many different kinds of white grubs but only a small number attack useful plants. The grubs live on the roots of various plants and are usually very abundant in sod land. The injury is most often noted to corn, small grains, root crops, potatoes and strawberries.

The large shining brown beetles which are seen so frequently at night bumping and buzzing around the ceilings and walls of lighted rooms are the parents of these grubs. Their eggs are laid in the ground where there is abundance of grasses, weeds, etc., the roots of which will serve as food for the young grubs. These grubs require from two to three years to complete their development, transforming to soft-bodied whitish pupae in small earthern cells the second or third summer after hatching. These pupae are helpless, capable of only slight movement and easily destroyed if exposed to their enemies. Many of them hibernate during the winter as tender pupae in these cells often from ten to eighteen inches below the surface of the soil.

The beetles fly only at night and feed on the foliage of various plants, such as maple, fruit trees, blackberries, nursery stock, etc. When abundant they may do considerable damage defoliating large trees.

Control Measures. Preventing injury is the most effective measure. This can be done by rotation of crops. Where these grubs are abundant in sod land, do not follow with corn or other susceptible crop but plant to clover or clover and oats. If this cannot be done, fall plowing is the most effective remedy. This will expose the grubs to the frosts and their enemies, such as the birds and domestic fowls. Cross plowing will aid in exposing these grubs where infestation is severe. In areas badly infested, hogs will clear the land if allowed to pasture any time between May to September.

Wireworms. These are probably the most injurious of all underground enemies. They are abundant in all parts of Nova Scotia and do very considerable injury to garden and truck crops. There are many species but only a small number do damage to cultivated crops. They are familiar to every one as wire-like, cylindrical, hard and shining worms, of a yellowish or reddish color. They are capable of moving rapidly by means of the three pairs of legs placed just behind the head. These worms are hard in texture, persistent, vigorous chaps and most difficult to poison or control.

The adults of wireworms are the familiar snapping or click beetles rather hard, blackish creatures, elongate-oval in form. They are readily distinguishable from all other insects by their ability of suddenly vaulting in the air with a sharp click when placed upon their backs.

The wireworms attack corn, potatoes, turnips, beets, carrots, lettuce, and many other familiar garden crops. They eat off the tender rootlets, bore through the tubers, and in corn, beans, etc., channel in all directions through the underground stalk. Their life-history is very similar to that of the white grubs.

Control Measures. These are very difficult pests to control unless one can practice crop rotation. Where abundant, practice short crop rotation using clover after sod. Do not plant such susceptible crops as potatoes, corn, vegetables of nearly all kinds, and cereals in badly infested land. No crop is entirely immune but clover suffers less and if planted a year or two the land may then be safely used for vegetables.

Early fall plowing should be practiced. By this means, the pupae are exposed to the frosts of winter while the beetles are also killed in large numbers. Encourage domestic fowls to follow the plow as they destroy them in large numbers.

Poisoned Baits. These sometimes prove effective. Soak corn in water containing strychnine or arsenic and sow in the field about ten days before regular crop. Harrow it in and the worms attacking these kernels will be destroyed. Another method is to use posioned baits of succulent clover, sliced potatoes, sweetened corn-meal dough, etc., placed under boards or chips in the infested fields. Use Paris green or some arsenical for the poison. Place early in the fields and renew frequently so as to have attractive baits before the planting season.

The following treatment is recommended by Prof. H. T. Fernald:—Cover the corn with gas tar thinned with linseed oil so as to have but a thin coating on the corn. Then place the seed in a bucket containing fine dust in which is mixed Paris green in such quantity that the coating on the seed shows a greenish color. Another treatment recommended is making a pas te of arsenate of lead about the consistency of paint, then stirring the corn in it until well covered. Spread out and dry before planting. These latter two treatments should be experimented with at first for there is danger in destroying the germinative power of the seed.

Plant Lice or Aphids. Nearly all the garden crops are attacked by different kinds of plant lice. Sometimes they do very considerable damage but if proper treatment is given at the **right** time, most, if not all, can be avoided.

The common plant lice are soft-bodied, greenish insects, very minute, with long legs and antennae. They are often present in immense numbers on single plants. They suck out the juices by means of tiny beaks inserted deep into the plant tissues. Thousands of these small **pumps** soon cause the plants to wilt and frequently die. They are usually most abundant on the under sides of the leaves so that it requires careful work to destroy them. Their life-histories are very complicated and cannot be outlined here.

Treatment. First watch your plants carefully, especially early in the season. As soon as the insects are found and if possible before the **curling** of the leaves, apply one of the following remedies:—(1) Kerosene Emulsion diluted as directed on page 81, (2) Ordinary Soap Solution, (3) One of the tobacco decoctions, (See directions on page 81. These should be applied with a good sprayer with sufficient pressure and use an angle nozzle so as to spray the under side of the leaves. This work must be done carefully as haphazard work will always give poor results.

Flea Beetles. These are minute, oval, usually dark colored beetles which may be known by their powerful leaping ability. There are many species and they feed upon many plants as turnips, cabbage, radish, mustard, potatoes, strawberries, etc. They most frequently do very severe damage to young plants just appearing above the surface of the ground, riddling the leaves with small holes.

Control Measures. Spray liberally with Bordeaux mixture. Keep the plants well covered,—it will drive the beetles away. In small gardens, plants may be screened with cheese cloth placed on wooden frames, the sides of the cheese cloth being covered with earth to prevent all entrance of beetles. (For further discussion and other methods of treatment consult Entomological Circular No. 2, Dominion Department of Agriculture. This may be obtained for the asking. Write the Director, Experimental Farms, Ottawa, Ontario).

COMMON INSECTS CLASSIFIED ACCORDING TO PLANTS THEY ATTACK.

BEAN. Bean Weevil (*Bruchus obtectus*). A small beetle about an eighth of an inch in length. Its eggs are laid in holes in the pods in the field. The grubs on hatching attack the developing beans. They also continue to breed in the shelled beans if kept in a warm place and will completely destroy them.

Remedies. Do not plant infested seed. Keep beans in a cold store room. If infested, fumigate as soon as crop is picked. Place seed in a close receptacle as a kerosene oil or molasses cask and pour over the seed one ounce carbon bisulphid for each one hundred pounds of seed. Cover securely with a wet canvas or cloth and leave for two days at least. Be **careful** when using carbon bisulphid as it is highly inflammable. Do not have lights around.

Black Bean Aphis. A black plant louse which does considerable damage to broad beans and horse beans.

Remedy. Spray thoroughly with soap solution or "Black Leaf" 40, tobacco extract.

CABBAGE. Cabbage Worm or Cabbage Butterfly (*Pontia rapae*). This is the worst cabbage pest. The green worms hatch from eggs laid by the common white butterfly so abundant all through the spring and summer. The eggs are beautiful, rather small and yellowish, deposited singly on the leaves. The green worms attack the young plants, eating the leaves and working down into the forming heads. There are several broods a season.

Treatment. Spray with Paris green or kerosene emulsion if the plants are not heading. In using kerosene emulsion be sure to hit the worms. Paris green gives better results if a "sticker" is added. A "sticker" may be prepared as follows:—

Resin 2 lbs., sal soda (crystals) 1 lb., water 1 gal. Boil until of a clear brown color—one to one and one-half hour. Cook in iron kettle in the open. Useful for onions, cabbage, and other plants hard to wet. Add this amount to each 50 gal. of bordeaux. For other plants, add this amount to every 100 gal. of the mixture. This mixture will prevent the bordeaux from being washed off by the heaviest rains.—*From Bul. 283, Cornell University Experimental Station.*

Cabbage Aphis (*Aphis brassicae*). Numerous, small, plant lice are often troublesome in cool, dry seasons.

Treatment. Spray with kerosene emulsion diluted one to six, or soap solution, one pound to six gallons water, or Black Leaf 40. Spray until the plants begin to head. **Destroy all stalks and other cruciferous plants in the fall.** In planting in the spring be careful to dip any infested plants in kerosene emulsion before setting.

Cabbage Maggot (*Pegomya brassicae*). A minute, white maggot found commonly about the roots of cabbage, turnip, radishes and cauliflower. This is the maggot of a fly which looks somewhat like the housefly though smaller. It eats into the crown and roots burrowing in all directions and doing immense damage in some years.

Treatment. Apply carbolic acid emulsion diluted with thirty parts of water. Should be done the day following the transplanting and repeated once a week for several applications. Some earth should be removed from each plant and the emulsion sprayed on forcibly. The emulsion may be prepared as follows:—Soap 1 lb.; water 1 gallon; crude carbolic acid (90 per cent. strength) 1 pint. Dissolve soap in hot water; add the carbolic acid and agitate into an emulsion.

The young plants may also be protected from this insect by surrounding each plant by a tightly fitting card cut from tarred paper.

CARROT. Carrot Rust Fly (*Psila rosae*). This is probably the most injurious pest of carrots and celery in Nova Scotia. It has been injurious in various parts of the Dominion since 1885. It was introduced from Europe. The adult insect is a small fly, measuring only one-sixth of an inch in length with a wing expanse of a little more than three-tenths of an inch. These small flies crawl into the earth through small cracks and lay their eggs on the roots of the plants. The small maggots on hatching penetrate the roots and burrow in all directions often completely destroying the early plantings. Plants thus attacked turn reddish, giving a rusty appearance, hence the name, "rust fly." During the winter these maggots continue working in the stored carrots, penetrating them in all directions, the dirty brownish burrows being easily recognized.

Control Measures. Spray along the rows with kerosene emulsion, one part to ten of water, or sprinkle around sand or ashes to which kerosene oil has been added at the rate of one-half pint to three gallons. These substances prevent egg laying.

Sow late and rotate crops. Do not follow carrots with celery or vice versa. Practise clean farming and destroy all refuse. Examine stored carrots and destroy all that are infested by feeding or burning.

Plant Lice. In case of plant lice on carrots spray them with kerosene emulsion or "Black Leaf 40" tobacco extract. Be careful in applying the kerosene emulsion to avoid injury. Make several trial sprays at first.

CAULIFLOWER. See under cabbage (Same insects attack it).

CELERY. Carrot rust fly (*Psila rosae*). See under carrot.

CUCUMBER. The Striped Cucumber Beetle (*Dabrotica vitatta*). This is a small beetle, about one-fourth of an inch long, yellow with black stripes. It feeds on the leaves of squash and melon as well as cucumber. The small beetles hibernate during the winter under boards, leaves, or trash of any kind. The greatest damage is usually done early in the spring by the over-wintering brood attacking the young plants as soon as set out. The eggs are laid about the stems and roots of the plants attacked, for the larvae feed on them, doing serious injury when abundant.

Preventive. Clean cultivation; destruction of over-wintering brood by the burning up of all trash as soon as crop is harvested. When plants are set cover with thin muslin or mosquito netting supported by small sticks as a barrel hoop cut in two to form two semicircles. This is very effective if the netting is so arranged that the beetles cannot get under it.

Remedies. Dusting with Paris green mixed with flour or plaster or fine road dust. Apply when plants are wet, and see that the under side of leaves are covered. Renew the plants to prevent egg laying.

Cucumber Flea Beetle (*Epitrix cucumeris*). See under Flea beetles.

ONION. Onion Maggot (*Pegomya cepetorum*). Much like the cabbage maggot in its life-history. Methods of control similar to those outlined there.

PARSNIP. Parsnip Webworm (*Depressaria hercliana* This pest attacks the flower cluster, distorting it and preventing the formation of seed. The larva is greenish or pale yellow marked with numerous black spots; head black. After destroying the flower clusters the larvae burrow into the stems eating the tender pith. Here they transform to pupae and later the grayish buff moths emerge.

Treatment. Spray with some arsenical as soon as the worms appear. Destroy all badly distorted heads by cutting off and burning. Destroy all wild carrots to prevent breeding.

PEA. Pea Weevil (*Bruchus pisi*). A small brownish black beetle which over winters in peas. In the spring it emerges and lays its eggs in young pea-pods, and grubs live inside the developing peas. Unlike the bean weevil there is only one brood a season as they do not breed in stored peas.

Treatment. Do not plant infested seed. Hold over one year as this will kill beetles if kept in tight receptacles. If necessary to plant infested seed treat with carbon bisulphid as recommended for bean weevil.

Pea Aphis (*Macrosiphum pisi*). A rather large greenish plant louse often doing immense damage to pea crops.

Treatment. Rotation of crops. Plant early to avoid attacks. In small gardens spray with kerosene emulsion diluted one to twelve of water or "Black Leaf 40" tobacco extract. Apply carefully so as to hit all the lice. Repeat frequently. When peas are planted in rows the brush-and-cultivator method may be employed. Brush plant lice from plants with pine boughs and follow with cultivator. Do this when sun is hot and ground dry as most of the lice will be killed before getting back to the plants.

RADISH. Maggot (*Pegomya brassicae*). See under cabbage maggot. Same treatment.

TURNIP. Aphis (*Aphis brassicae*). See under cabbage.

Striped Flea Beetle (*Phyllotreta vittata*). See under flea beetles for control measures.

Root Maggot (*Pegomya brassicae*). See under cabbage.

Helps in the Study of Insects.

Insects Injurious to Vegetables, by F. H. Chittenden. Orange Judd Co., New York.

Bulletins and circulars published by the Dominion Department of Agriculture, Ottawa may be obtained **free** on application to the Director Experimental Farms, Ottawa.

Bulletins, circulars, etc., issued by the United States Department of Agriculture, Washington, D. C. Lists of publications available and the prices may be obtained from the Superintendent of Documents, Washington, D. C.

DISEASES OF VEGETABLES.

By H. W. Smith.

The diseases of plants differ from those of animals in that usually when a plant is attacked by disease, there is no recovery or it is of no value if it survives. Again, most of the diseases of plants are capable of being acquired by healthy plants from affected ones,—infectious or contagious. Plants are not as a rule affected by non-infectious diseases, Or at least such are not recognized.

These two facts, the inability to cure a plant disease and the infectious nature of such disease is fundamental in regard to the treatment of all plant diseases. As a rule, if a vegetable is diseased it should be destroyed, either boiled or burned. In no case should it be left on the ground for the disease to mature and infect other plants. If the crop is diseased seriously, or even through the plot or field so that all diseased specimens cannot be readily removed before the disease has matured, then such should not be grown on that or adjacent fields the following year and with some diseases a longer period must elapse. The more serious diseases of vegetables are capable of living in the soil for more than a year so that special treatment in such cases is necessary and the abandonment of the affected crop on such land for a term of years. While the application of lime and the use of sprays may help in some cases, it is the safer and wiser practice to abandon the growing of a crop if it is seriously diseased, or grow it at a distnce from the affected field with care that none of the soil from that field is blown by wind, washed by rain or carted by tools on to the field from the affected field. With such precautions and the use of seed free from disease a repetition of the outbreak can be avoided.

Where it is not practicable to grow one's own seed it should be purchased from a reliable seedsman with a guarantee that it is free from disease. Certain diseases like clubroot and black rot of cabbage have been apparently widely distributed by affected seed in recent years.

It should be remembered that the healthier the plant the less likely to become diseased. Hence good drainage, a proper supply of plant food and none in excess, good culture and the avoidance of sudden changes of temperature promote health. Damping off and root and stem rots are promoted by crowding and by wet and sour soils.

Asparagus rust. This can be controlled by removing all affected stalks as soon as the rust appears and spray with Bordeaux mixture to which resin mixture has been added. (Resin mixture—resin-5, Lye-1, fish oil-1, water 4 parts cooked together and diluted with equal amount of water). Use 3 parts Bordeaux to one of dilute mixture.

Club-root of cabbage, turnip etc. This serious disease is rapidly on the increase in this province. It is usually easily told as it causes the roots to grow misshapen with irregular swellings on them. In some cases I have specimens sent me that had "Tumor-like growths" on them which were not club-root but apparently "Crown-gall" but with this exception deformed knotty roots indicate club-root. All affected roots should be burned or boiled and the field treated to lime, 1000 lbs. per acre at least, and all such crops and weeds of the mustard family kept off for five years or longer.

Carrot, Parsnip and Tomato (Fruit) Rot. This disease attacks the crowns and gradually works down through the entire root. It also causes the fruit of tomatoes to rot. The roots and fruit soften as the rot extends. Do not grow vegetables on such soils for two years but apply lime and grow grain.

Black-rot of Cabbage. This serious bacterial disease is of frequent occurrence. It is readily recognized by the leaves turning black, especially along the veins and ribs. The leaves rapidly decay. Do not try to store the crop but dispose of it for immediate use. Observe the directions at the beginning of this article and grow other than cruciferous crops on such land for a year. Use only clean seed.

Anthracnose of Bean. Every one is familiar with the spots on bean pods and seeds. Select clean seed. Do not work around the plants when they are wet as that helps distribute the disease. If it appears early in the season spray thoroughly with Bordeaux mixture. Grow another kind of crop on this and adjacent lands the following year.

Cucumber, Squash, Pumpkin and Melon have been occasionally reported to me as diseased. These have invariably been produced by crowding, too much water or shade. These plants require the dry situations in our moist and cool climate.

Potato. Three common diseases occur, early blight, late blight or rot and scab. The first two are controlled by spraying with Bordeaux and crop rotation but scab when introduced into the soil will remain there for years and such affected soil should not be used for potatoes again. Care should be exercised not to use scabby potatoes for planting and in every case where any doubt exists as to the potatoes even having come in contact with diseased potatoes they should be treated before planting with either corrosive sublimate or formalin solution.

Fungicides. The following fungicides are commonly used. It should be remembered that in using formulas from the United States that their gallon is only about four fifths our gallon.

Bordeaux Mixture.

This is most easily prepared by slaking good stone lime (Quick lime) in some water, diluting till, by stirring, it will flow easily and strain this milk of lime into the spray barrel. In the meantime or previously copper sulphate has been dissolved by suspending it in a cloth or bag near the top of some water in a wooden pail or receptacle. The hotter the water the more rapid the solution. The milk of lime should then be made up to about nineteen twenteth of the required solution and the copper sulphate solution added, then add water till the full solution is obtained. Use from three-fourths to one pound of lime and an equal amount of copper sulphate (Blue vitriol) to one hundred pounds (ten gallons) of water. Apply before the disease appears.

Corrosive Sublimate Solution.

In a wooden receptacle place the required water and add the mercuric chloride (Corrosive sublimate) after it has been thoroughly powdered or crushed, and stir till dissolved. Use one ounce of the sublimate to six gallons of water. For scab, leave potatoes in this solution for at least an hour and a half. It is a very poisonous solution and should be used only with the greatest care.

Formalin Solution.

Formalin as purchased from the trade should contain about forty per cent pure formaldehyde. Use one ounce of this solution to one and one half gallons (15 pounds) of water. Leave potatoes in this solution two hours for scab.

Please Observe

If possible, grow your own seed.

Do not use poor seed nor seed from diseased crops.

Practice crop rotation and remember where different crops are attacked by the same disease such crops should not follow one another.

When a crop is diseased either do not grow it the following year or grow it in a field some distance from where previously grown.

When a crop is attacked by a disease send some of the diseased plants either to the Agricultural College, Truro, or to the Dominion Botanist, Ottawa with a full account of the trouble.

Diseases of plants can be prevented but rarely checked after they have attacked the plant.

Diseases are promoted by poor drainage, poor soil and poor culture.

SPRAYING OF VEGETABLES.

By E. M. Straight.

The air is pregnant with insect life! The "hum" and the "whir" are fruitful topics from the standpoint of the rural poet; but the market gardener whose vegetables are attacked by caterpillars on the leaves, grubs in the roots, larvae in the stems, besides multitudes of fungoid diseases above and below ground, fails to see the poetry. One thing he is obliged to see, and that is his crops. Unless protected, they will gradually go back to the soil; and the realization will be forced upon him that his labor has been for nought. The growers are accepting the verdict, "Spray or surrender." If all did so the task of protecting plants would be much easier, for the gardener is handicapped if forced to fight alone.

It would seem that arsenate of lead is winning a place over paris green as an insecticide. It sticks better, costs more, is popular and easily obtained. Paris green is not to be despised by any means. It will kill insects which chew if properly applied. The celebrated lime-sulphur, so effective as a fungicide in the orchard, is not to be recommended so highly as we once thought for vegetables.

Our experiments would indicate that the old reliable Bordeaux mixture is superior to lime-sulphur for potatoes, and we believe for other truck crops. The grower has in Bordeaux mixture and arsenate of lead a combination with which he may do very effective work against most enemies of the garden.

Bacterial Diseases.

We have a class of diseases, however, which spray mixtures cannot reach. These maladies are bacterial in origin, within the tissue, so that spraying the plant is of no more avail than spraying a man dying with tuberculosis. Melon wilt and the soft rots of some root crops belong to this class. Dig out the plants so attacked and burn them. You cannot save them and you may hinder the spread of the disease to the remainder of the field.

Plant lice cannot be poisoned. They do not eat, and therefore cannot be reached by a stomach poison. Lice suck up their food. They are usually very difficult to control. We may hope to reach them only by means of a contact poison, that is, something that will kill the insect by coming in contact with its body. Hot water is a good example of a poison of this kind.

Every gardener, if he would intelligently fight insect pests and fungoid diseases, must know his enemies. He must know something of their live-history, the weak point in their life cycle, or in other words their most vulnerable point of attack. It is not necessary for him to know the scientific name or the exact number of joints in their hind legs, but a good working knowledge of his enemies is essential to the best success.

Enemies of Potatoes.

The potato is attacked by Early Blight, Late Blight, Flea Beetle, Blister Beetles, and Colorado Potato Beetles. Certain bacterial diseases also attack the plant which cannot be controlled by sprays.

Early Blight of the potato is a premature spotting and dying of the potato leaves, due to the work of a parasitic fungus (*Alternaria solani*). The occurrence of the Early Blight, however, is liable to be influenced by the general vigor and other conditions of the plant; yet there is no just ba is for denying the parasitic nature of the disease. Early Blight is the cause of the early dying of potato tops but does not cause rotting of the tubers.

The Late Blight and rot of the potato is so generally known that frequently this malady is simple called the potato disease. It is the oldest potato malady, and was the cause of the potato famine in Ireland. The spots cannot be easily confused with other potato diseases. These diseased areas frequently begin at the edge or top of the leaf and spread until the whole leaf is involved. They present in moist weather a dark, somewhat water soaked appearance with slightly purplish tinge. Upon the tubers this fungus develops the well-known dry rot of the field and storage pits.

Potato Flea Beetle.

The potato is often attacked by a very small beetle which also attacks the tomato, cucumber and beans. This insect is commonly called the potato flea beetle. They often congregate in such numbers that the leaves of plants appear almost black with them. Potatoes and tomatoes often have their leaves so badly eaten that the leaves shrivel and die in the case of the tomato, although the potato usually pulls through.

Colorado Potato Beetle.

The Colorado potato beetle is a native of the strip of country which lies just east of the Rocky Mountain range and includes eastern Colorado. In its native state the beetle feeds upon the wild weeds of the potato family. The chief of these is the buffalo bur, but the beetle is quite a general feeder on plants of this group, including not only potatoes but tomatoes, egg plant, tobacco, and pepper. The adult passes the winter in the ground. In spring the beetles emerge, seek food plants on which they feed and deposit eggs. These adults sometimes, though not always ,do much injury. They die shortly after depositing their eggs. The eggs hatch in from eight to ten days, depending on the temperature. The young reach full growth about three weeks later. Soon eggs are laid again, and the second generation hatches. Ordinarily two broods are all that we may expect.

Remedies.

All of these maladies may be controlled by Bordeaux mixture and Paris green or arsenate of lead. Bordeaux mixture of the usual formula, four-four-forty, and if Paris green is used, one pound to forty gallons of water is quite sufficient. Two pounds of arsenate of lead will kill the beetles with equal certainty, and it remains on the foliage longer, owing to its sticking properties. The first application should be made as necessary, about the time the Colorado potato beetle is hatching, and at intervals of ten days as required. Usually three applications will be quite sufficient.

The two principal enemies of the cabbage are the cabbage butterfly and the cabbage root maggot. Where the cabbage butterfly spends the winter is not known to us; but these white butterflies are of perennial occurrence, as everyone must have seen as they flit over turnip, rape, cauliflower and cabbage fields in early spring. The butterflies do no damage but from the eggs which they deposit are hatched the green caterpillars which have been so destructive in many parts. There are several broods in the season. These caterpillars are easily controlled by arsenate of lead or Paris green. Owing to the peculiar nature of cabbage foliage a sticker is usually added to the poison. We have found soap added to the spray as effective as anything for this purpose.

The white maggots that feed on the roots of cabbage hatch from eggs laid by a small fly somewhat resembling the common house fly, near the plant at the surface of the ground. If tarred paper discs are used when plants are set there will be little trouble. This disc prevents the deposition of the eggs. After the plant is attacked little can be done. Certain decoctions are recommended to be poured in the soil around the plants but the task is almost hopeless.

Other Crops.

Cucumbers, squash, pumpkins, melons and other similar crops are all subject to attacks from the striped cucumber beetle. These wiry little fellows are not easily poisoned and not easily controlled. We have found Bordeaux mixture, though not a poison, as good as anything for this beetle. Bordeaux acts as a repellant. These beetles do not like its flavor and avoid plants so treated. Land plaster, road dust, or even flour is of some avail. These substances protect the leaves by forming a close covering over them. The beetles will not eat through the powder and the plants are saved. The powder should be put on in the morning when the plants are wet with a powder gun or by sifting through a cheese cloth bag. Traps are sometimes employed. A few seeds are planted somewhat earlier than the main crop, around the borders of the field. The beetles congregate on these and may be poisoned by much stronger applications of arsenate of lead than we would dare to apply to the main crop. If these trap plants are killed by the poison no matter. The bacterial diseases of the cucurbits cannot be controlled by sprays. The first plants attacked should be dug up root and branch and burned. Serious outbreaks are sometimes thus avoided.

With all summer sprays for vegetables thoroughness is the important thing to be sought. A plant thoroughly sprayed with a weak mixture is much more thoroughly protected than one partly covered with one twice as strong. All plants subject to attack should be entirely covered with their spray armor all the time. Then, and then only, are the plants safe.

THE COOKING OF VEGETABLES.

By Miss Jennie A. Fraser.

The simpler the methods used in cooking and serving vegetables the better; the principal thing to be observed is to place them on the table in as digestible and appetizing a manner as possible. A properly grown and well cooked vegetable is a pleasure to the eye, acceptable to the taste and readily digested. A poorly developed, badly-cooked, water-soaked vegetable should be avoided as it is a frequent source of serious digestive disturbances. There is no reason why any vegetable prepared in the proper manner and served with plain bread and butter should not form a palatable course by itself, if it is so desired.

All vegetables should be crisp before cooking. If lacking in this quality, they should be soaked in cold water long enough to restore their freshness. For new vegetables this will require only a few minutes, while old vegetables require soaking for some hours. All vegetables must be thoroughly cleaned before cooking. Cabbage, cauliflower and all headed vegetables should be soaked in salted cold water to remove any insects or worms.

There are four methods ordinarily used in the cooking of vegetables, boiling, simmering, baking and steaming and the nature of the vegetable determines the method to be used. Boiling in water is the method most frequently employed. Steaming is similar in principle to boiling but is more commonly used for watery vegetables. Simmering is used for strong smelling vegetables, as cabbage, onions, etc. Baking is used principally for potatoes and squash.

To obtain the best results in cooking, all vegetables should be put on in boiling salted water, using two level teaspoonfuls salt to one quart of water; the water is brought to the boil again, as quickly as possible and kept boiling until the vegetable is tender to the centre but not overdone. As soon as the vegetable is tender but still firm, drain thoroughly, season with pepper and salt and serve with sauce or butter. Too much emphasis cannot be laid on the mistake of over cooking of vegetables. It breaks up and wastes the vegetable and in many cases develops undesirable flavors. Where the vegetables are new, tender, crisp and firm the simpler the treatment the better and often butter, pepper and salt are the only things required to render them most appetizing. It is only an extravagance to add a rich sauce to a fresh vegetable.

To instance the difference between a vegetable that is properly cooked and one that is not, it is only necessary to imagine a dish of potatoes, done to perfection, white mealy and dry; a delight to the eye and the palate and nourishment to the body and beside it a dish of overdone, water-soaked, dark, soggy potatoes that spell disaster to the partaker. Which dish is the more attractive? Which dish suggests nourishment and palatability? Which dish suggests certain indigestion? Which dish suggests waste? The first result is as easily obtained as the second and potatoes from the same bag may be used in both cases and yet, behold! a whole world of difference, and why? Simply the difference between proper and improper treatment.

Before setting down specific recipes for the various vegetables, a few general rules may be given which will be more easily followed, if put down consecutively:—

A. Preparation of vegetables.

1. Wash thoroughly; pare, peel or scrape the vegetables, cutting into suitable pieces.

2. If vegetables are not fresh from the garden they should be soaked in cold water from fifteen minutes to several hours as required.

3. Dried vegetables, as beans, peas, etc., should soak at least twelve hours.

4. Headed vegetables as cabbage, cauliflower, etc., should be soaked in cold, salted water to which a few drops of vinegar may be added to remove any insects.

5. All salad vegetables and greens should be washed very carefully in cold water, each leaf being separately

examined and any decayed parts removed. Spinach requires especially careful attention to remove the grit. Vegetables for salads should be thoroughly chilled before using. Lettuce should be drained as free as possible from water, rolled in cheese cloth and put in the refrigerator but not directly on the ice. Parsley should be kept, stalks down, in a dish of cold water in the refrigerator or placed in a tightly covered fruit-jar.

B. Cooking.

1. All fresh vegetables should be put on to cook in boiling salted water—two level teaspoons salt to one quart, and gently boiled until tender.

(1) Potatoes are made drier by sprinkling the salt on them immediately after they are drained as the salt tends to draw out the moisture.

2. Put all dried vegetables on to cook in cold water and simmer until tender.

3. Vegetables that are strong smelling should simmer.

4. The cover should be drawn to one side of the saucepan to allow the steam to pass off and the vegetables to ventilate, while cooking.

C. Serving.

1. Drain the vegetable when tender and serve with a vegetable sauce or with butter, pepper and salt, or mash it and add butter, pepper and salt.

2. The vegetable water except from potatoes and dried vegetables may be used for sauces or soups, as it contains much of the valuable mineral matter.

The recipes given below have all been carefully tested and may be relied upon to give excellent results if carefully followed. The quantities used are level measures and it is only by attention to the details of cooking that anything attaining to perfection can be reached. Many of the vegetables spoken of are not commonly used but they may be grown in every garden and are worthy of a place on the table of any home.

As a large amount of the nutritive properties of a vegetable is drawn out in boiling, especially if the vegetable is cut in small pieces, the following method of making vegetable sauce is recommended, using for liquid the water drained from the vegetable—if the vegetable is not too old—half vegetable water and half milk or all milk.

Vegetable Sauce.

1 cup liquid,
2 tablespoons butter,
2 tablespoons flour,
1-4 teaspoon salt,
a little pepper.

Melt butter, add flour, mix thoroughly until smooth. Stir in liquid while off the fire and then bring to boil, stirring constantly. Add salt and pepper. Pour over vegetable in hot dish and serve at once.

Asparagus.

This is one of the most delicious spring vegetables and requires very simple treatment.

Cut off lower part of stalks as far down as they will snap, wash, remove scales and tie in bunches. Put into a deep saucepan with the cut end resting on the bottom of the saucepan. Pour in boiling water to come up to the tender heads but not to cover them. Add salt and cook until tender, about fifteen minutes. Drain, remove, string and spread with soft butter allowing one and one-half tablespoons butter to each bunch asparagus. Asparagus is often broken in inch pieces for boiling, cooking the stalks longer than the tips.

Asparagus on Toast.

Have some slices of well-toasted, slightly buttered bread on a platter. Arrange the asparagus on the toast, spread with butter, season with salt and serve at once.

Asparagus in White Sauce.

Boil asparagus, cut in one inch pieces, drain and add to Vegetable Sauce having used one cup milk for the liquid, and allowing one cup sauce to each bunch asparagus.

Beans.

Beans are served as a vegetable in three stages of growth, namely, the tender young pods, the fresh seeds and the dried seeds. The pods are known as green or string beans, or as butter beans, according to the variety.

Green or String Beans.

Remove string, if any, and cut in one inch pieces; wash and cook in boiling water until tender but not overdone. Drain and season with butter and salt. One generous tablespoon of butter and one level teaspoon of salt are about the right proportion for one quart of beans.

Shell Beans.

Wash and cook in boiling water from one to one and a half hours, adding salt during last half hour of cooking. They must be soft but not mushy. Season with butter and salt.

Dried Beans.

Wash and pick over carefully one cup dried beans and soak in cold water over night, drain and put on to cook in cold water allowing them to simmer until tender; drain, add three-fourths cup cream and season with butter and salt. Re-heat before serving. Cooked like this, dried beans make a very acceptable vegetable towards spring. If the beans seem very hard and old, a tiny bit of soda may be added when the beans are put on to cook for the first ten or fifteen minutes. That water is then drained off and fresh boiling water added to finish the cooking.

Beets with Butter.

Wash beets, being careful not to break the skins. Cook in boiling water until tender. Young beets will cook in one hour but as the beets grow older, the time must be increased. Drain, pour cold water over them and rub off the skin. Cut in thin slices and season with butter and salt and serve at once.

Sugared Beets.

4 hot Boiled Beets,
3 tablespoons butter,
1 1-2 tablespoons sugar,
1-2 teaspoon salt.

Cut up the beets in slices or pieces, add butter, sugar and salt and re-heat for serving.

Pickled Beets.

Slice cold boiled beets in thin slices and cover with mild vinegar. This is the best method of serving old beets which take about four hours steady boiling to render them tender.

Beet Greens.

Beets are usually thickly sown and as the young beet plants begin to grow, they must be thinned. These young plants make delicious greens, particularly if the root has attained some little size. Do not separate the root from the leaves but examine them very carefully leaf by leaf. Wash thoroughly in many waters. Cook in plenty of boiling water, adding a teaspoonful salt for every quart of greens. Boil rapidly until tender, which will take about thirty minutes. Drain, chop rather coarsely and season with butter and salt.

Brussels Sprouts.

Remove the wilted or yellow leaves from the little heads or "sprouts.' Cut the stock close to the head, and soak in salted cold water for an hour or more. Drain well and cook in boiling salted water fifteen or twenty minutes or until easily pierced with a skewer. They may be served with butter, pepper and salt or served with vegetable sauce. One cup sauce should be used for a pint of vegetables.

Brussels Sprouts Saute.

To saute a food is to cook it quickly in a frying-pan in a little fat. Boil the sprouts and drain well. Heat a frying-pan, put in the butter and add the sprouts and seasonings. Place over a hot fire and shake frequently. Cook five minutes and serve hot.

Boiled Cabbage.

Take off outside leaves, cut in quarters and remove tough stalk. Soak in cold salt water and cook in an uncovered vessel in boiling salted water, to which is added one-fourth teaspoon soda to prevent a disagreeable odor during cooking. Cook from thirty minutes to one hour, drain and serve; or chop and season with butter, salt and pepper.

Escalloped Cabbage.

Cut one-half boiled cabbage in pieces; put in buttered baking-dish, sprinkle with salt and pepper and add one cup white sauce. Lift cabbage with fork that it may be well mixed with sauce, cover with one-half cup buttered crumbs, place on oven grate and bake until crumbs are brown.

Cold-Slaw.

Select a small, heavy cabbage, take off outside leaves and cut in quarters; with a sharp knife slice very thinly. Soak in cold water until crisp, drain, dry between towels and mix with cream salad dressing. A recipe for the latter will be found at the end of the vegetable recipes.

Hot Slaw.

Slice cabbage as for cold-slaw using one-half a cabbage. Heat in a dressing made of yolks of two eggs slightly beaten, one-fourth cup cold water, one tablespoon butter, one-fourth cup hot vinegar and one-half teaspoon salt, stirred over hot water until thickened.

Carrots.

Carrots may be always found in the market and are valuable both as a vegetable and as a flavoring for soups and for garnishing. Young carrots should cook in thirty minutes and old ones in forty-five.

Boiled Carrots.

Wash, scrape and cut young carrots into small cubes or in fancy shapes; cook until soft in boiling salted water or in stock. Drain, season with butter, pepper and salt or cover with vegetable sauce using one-half milk and one-half carrot water as the liquid.

Carrots and Peas.

Cook carrots as above until done. Drain and add an equal quantity of cooked green peas. Drain and season with butter, pepper and salt.

Cauliflowers.

Cauliflowers may be obtained throughout the whole year but are cheapest and best in September and October. Always select those with white heads and fresh green leaves; if dark spots are on the heads, they are not fresh. Cauliflower is one of our most delicious vegetables when cooked properly but if over-cooked becomes dark and develops decidedly unpleasant odors.

Remove all the large green leaves and the greater part of the stalk. Let it soak head down in a pan of cold water, which contains to each quart a teaspoonful of salt and a teaspoonful of vinegar, from thirty minutes to one hour. When ready to cook, put in a saucepan head up with plenty of boiling salted water and cook with the cover partially off the saucepan for twenty minutes or until tender. When the head is compact, a little more time must be allowed for cooking but never any more than thirty minutes as cauliflower begins to deteriorate the moment it begins to be overcooked. Overcooking can be told by the dark color and unpleasant odor and is a condition only too frequently found and renders the vegetable not only unpleasant to the eye and palate but indigestible. If it is necessary to keep this vegetable warm for any length of time, cover the dish with a piece of cheesecloth.

Creamed Cauliflower.

Cook cauliflower as above, drain, separate flowerets and re-heat in one and one-half cups white sauce.

Cauliflower au Gratin.

Place a whole cooked cauliflower on dish for serving, cover with buttered crumbs and place on oven grate to brown crumbs; remove from oven and pour one cup white sauce around cauliflower.

Escalloped Cauliflower.

Break up a cooked cauliflower into small pieces and put in a baking dish. Pour over enough white sauce to cover and spread over the top one-half cup buttered crumbs. Bake in oven until crumbs brown.

Celery.

Celery may be obtained nearly every month of the year but is at its best in late fall and early winter. It is most useful as a salad and flavoring plant but is more commonly eaten raw, without any dressing except salt, as an accompaniment of fish, meat, etc. Only the tender, inner stalks should be eaten raw. The hard outside stalks may be cooked and served with a sauce or may be pressed through a sieve and serve as a basis for a delicious cream soup.

To prepare celery for the table, cut off roots and leaves, separate stalks, wash, scrape and chill in ice water. By adding a slice of lemon to the ice-water, celery is kept white and is made crisp. If the tops of stalks are gashed several times before putting in water, they will curl backward and make the celery look more attractive.

Celery in White Sauce.

Wash, scrape and cut outer celery stalks in one-inch pieces; cook twenty minutes or until soft in boiling salted water; drain and add one cup white sauce to two cups celery.

Corn.

Green corn is a typical American food product and is a very favorite vegetable. The most satisfactory method of serving green corn is in the cob, but it should not be overcooked as the delicate flavor is very easily lost.

Boiled Green Corn.

Remove husks and silky threads. Have a kettle of water boiling hard. Drop in the corn and cook from ten to twenty minutes. Place on a platter covered with a napkin; draw corners of the napkin over the corn; or cut from cob and season with butter and salt.

Succotash.

Cut hot boiled corn from the cob, add equal quantity of hot boiled beans, season with butter and salt; re-heat before serving.

Cucumbers.

Cucumbers are most generally eaten raw but they make a most attractive dish when stewed and served with a white sauce or seasoned with butter, pepper and salt and served on toast. The pared and quartered cucumber should be cooked until tender in boiling salted water, which will take about fifteen minutes and they may be served as desired.

Sliced Cucumbers.

Remove thick slices from both ends and cut off a thick paring, as the cucumber contains a bitter principle, a large quantity of which lies near the skin and stem end. Cut in very thin slices and keep in cold water until ready to serve. Drain, and cover with crushed ice for serving.

Fried Cucumbers.

Pare cucumbers and cut lengthwise in one-third inch slices. Dry between towels and sprinkle with salt and pepper, dip in crumbs, egg and crumbs again, fry in deep fat and drain.

Eggplant.

Eggplant is in season from September until February. The common methods of cooking are frying, boiling and baking.

Fried Eggplant.

Pare an eggplant and cut in very thin slices. Sprinkle slices with salt and pile on a plate. Cover with a weight to express the juice, and let stand one hour. Dredge with flour and saute slowly in butter until crisp and brown.

Lettuce.

Lettuce is obtainable all the year and is especially valuable during the winter and spring as it assists in stimulating the appetite. It is used for salads, for garnishing and when grown too old may be cooked.

Boiled Lettuce.

Wash lettuce carefully, carefully remove thick, bitter stalks, retaining all sound leaves. Cook in plenty of boiling salted water for ten to fifteen minutes, then blanch in cold water for a minute or two. Drain, chop lightly and re-heat with butter, salt and pepper to taste.

If preferred, the chopped lettuce may be heated in pint of white sauce.

Onions.

The onion is the most useful of all vegetables, both as a vegetable and as a flavorer. There is hardly a stew, soup or sauce that is considered complete without the addition of the onion flavor. As a vegetable, onions are very wholesome but are objectionable on account of their odor.

Boiled Onions.

Put onions in cold water and remove skins, while under water. Drain, put in a saucepan and cover with boiling salted water, boil five minutes, drain and again cover with boiling salted water. Cook one hour or until soft, but not broken. Drain five minutes and season with butter, pepper and salt.

Onions in Cream.

Prepare and cook as boiled onions, changing the water twice during boiling; drain and cover with cream or thin white sauce.

Parsnips.

Parsnips, owing to their pronounced flavor, are not so generally liked as most of the other roots. They are at their best in the spring after being in the ground all winter.

Boiled Parsnips.

Wash and scrape parsnips and cut in suitable pieces. Cook until tender in boiling salted water. Drain and serve with white sauce or brown butter sauce or saute in hot butter until crisp and brown on the outside.

Green Peas.

Green peas should be cooked as soon after gathering as possible and when young and tender are best simply boiled and seasoned with butter, pepper and salt. This is another vegetable very easily spoiled by overcooking. They should be boiled slowly with the cover half off the saucepan. It is impossible to state an explicit time for cooking peas as so much depends on the maturity. Young peas will cook in twenty or thirty minutes.

Boiled Peas.

Remove peas from pod, cover with cold water and let stand one half hour. Skim off undeveloped peas which rise to the top of the water, and drain remaining peas. Cook until soft in a small quantity of boiling water, adding salt the last fifteen minutes of cooking. Drain and season with butter, salt and pepper, or pour over drained peas white sauce in the proportion of three-fourths cup sauce to two cups peas.

Potatoes.

Potatoes stand pre-eminent among the vegetables used for food. When properly cooked they are a delight; when improperly cooked they are vile. The three principal ways of cooking potatoes are baking, boiling and French fried.

Baked Potatoes.

Wash potatoes thoroughly, selecting those of uniform size. Place them on grate of a hot oven and bake until when tested with fingers they are soft. Have ready a clean towel and when taking them out of the oven, press the entire surface gently and burst the skin to let the steam escape. Serve in a hot dish *not* covered closely.

Boiled Potatoes.

Wash and pare potatoes thinly, removing all spots. Soak them as you would other vegetables, if necessary. Drain and just cover with boiling water and boil gently until tender. Test with a paring knife. Drain thoroughly, sprinkle with salt and shake gently over fire to dry them. Serve in a hot dish but never cover them tightly.

Mashed Potatoes.

After they are dried, mash potatoes thoroughly with potato masher or put them through ricer. To every cup of potato, add about three tablespoons hot milk and a teaspoon butter. Beat thoroughly until white and light. Add salt and pepper and pile lightly in hot vegetable dish.

French Fried Potatoes.

Wash and pare small potatoes, cut in eighths lengthwise and soak one hour in cold water. Take from water, dry between towels and fry in deep fat. Drain on brown paper and sprinkle with salt. Care must be taken that fat is not too hot as potatoes must be cooked as well as browned.

A whole book could be written on the different ways of cooking potatoes and of utilizing left over potatoes in simple and elaborate dishes. The recipes given above are those most frequently used and those that are usually preferred.

Sweet Potatoes.

Sweet potatoes may be baked in the same way as white potatoes. Small ones will bake in half an hour, while very large ones will require an hour or more. If the potatoes are liked very moist and sweet, bake from an hour to two hours, depending on the size.

Radishes.

Radishes are used merely for a relish and are served uncooked. To prepare for the table, remove leaves, stems and tip end of root. Scrape roots and serve on crushed ice.

Spinach.

Spinach is one of the best greens grown but is rather expensive in two things,—labor and butter. It requires labor, time, water and patience to wash it thoroughly clean and no vegetable requires as much butter to render it palatable. Where strict economy must be practised, sweet drippings from roast beef or chicken may be substituted for the butter. To clean spinach, cut off the roots, break the leaves apart and rinse them well in water after water until there is no sand on the bottom of the pan. If the spinach is at all wilted, let it stand in cold water until it becomes fresh and crisp.

Boiled Spinach.

After thoroughly washing spinach put in a stew-pan, allow to heat gradually, and cook twenty-five minutes or until tender, in its own juices. Old spinach is better cooked in boiling salted water, allowing two quarts water to one peck spinach. Drain thoroughly chop finely, re-heat and season with butter, pepper and salt. Garnish with slices of hard boiled egg.

Summer Squash.

Wash squash and cut in thick slices or quarters. Cook twenty to thirty minutes in boiling salted water or cook in steamer, which will take almost an hour. Turn in a cheese cloth placed over colander, drain, and wring in cheese cloth. Mash and season with butter, salt and pepper.

Winter Squash.

Cut in pieces, remove seeds and stringy portions and pare. Place in a steamer and cook over boiling water until soft. Mash and season with butter, salt and pepper. If squash lacks sweetness, add a little sugar. Unless squash is very dry, it is much better steamed than boiled.

Baked Winter Squash.

Cut squash in halves, remove seeds and stringy portion, place in a dripping pan, cover and bake two hours, or until soft, in a slow oven. Remove from shell, mash and season with butter, pepper and salt.

Tomatoes.

Tomatoes are obtainable through the year but are cheapest and best during September. As a vegetable, the tomato may be prepared in many ways. It is an excellent foundation for soups and sauces and made into catsups or pickles it serves as a relish. When properly canned the vegetable keeps well and retains its natural flavor. Overcooking spoils both the flavor and color of the tomatoes.

Sliced Tomatoes.

Wipe and cover with boiling water; let stand one minute when they may be easily skinned. Chill thoroughly and cut in one-third inch slices.

Stewed Tomatoes.

Wipe, pare and cut in pieces, put in saucepan and cook slowly twenty minutes, stirring occasionally. Season with butter, salt and pepper.

Turnips.

Turnips are best in fall and winter. Towards spring they become woody and can only be used for stews and flavoring.

Mashed Turnips.

Wash and pare turnips, taking off quite a thick paring. Cut in slices or quarters and cook in boiling salted water until soft. In the fall this will probably take about thirty minutes and later in the winter from forty to forty-five minutes. Drain, mash with a wooden masher and season with butter, pepper and salt.

Diced Turnips.

Wash, pare and cut turnips in one-half inch dice. Cook in boiling water until soft and serve with a generous seasoning of butter, pepper and salt or pour over a cup of white sauce to three cups of diced turnips.

VEGETABLE SOUPS.

Nearly every vegetable known can be utilized in the preparation of soups either as a foundation or as a garnish. Cream soups are an excellent way of employing left over vegetables or vegetable water. An excellent basic recipe is appended in which any vegetable at hand may be used, the result being a highly palatable and nourishing soup.

Cream of Vegetable Soup.

1 cup milk,
1 cup vegetable water,
1-2 cup vegetable pulp.
1 to 2 tablespoons flour,
1 to 2 tablespoons butter,
1–2 teaspoon salt.

Pepper and other seasonings as desired,—onion, parsley, celery or celery salt. Heat all the liquid—the milk and vegetable water—thicken with the flour rubbed smooth with a little milk. Add vegetable pulp and seasonings. If a starchy vegetable is used, as potato, one tablespoon flour will be all that will be required but two tablespoons butter will be necesarsary to give the required flavor. The above amount will make two good servings.

Cream of Tomato Soup.

1 cup milk.
1 1-2 cups tomato
2 tablespoons flour,
1 tablespoon butter,
1–2 teaspoon sugar,
1–2 teaspoon salt.
1–8 teaspoon soda.
Pepper and leaf.

Stew the tomatoes with the seasonings, press through sieve; make a white sauce of other ingredients. Add the soda to the tomatoes and combine mixtures.

VEGETABLE SAUCES.

A recipe for vegetable sauce has already been given, which is exactly the same as the standby of every housewife, the old and reliable white Sauce, except that in the latter, milk is used always as the liquid. The method and proportions are exactly the same.

Thin White Sauce.

Where a thinner sauce is required use exactly the same method and proportions except with the flour, reducing the proportion of that ingredient from two tablespoons to one and one-half tablespoons.

If another change is desired use the cup white stock as a liquid. This sauce is known in cook books under the name of Veloute Sauce.

Tomato Sauce.

This sauce may be used in a variety of ways. Served with macaroni, rice, etc. it will form a substantial diet for a simple luncheon or supper and is delicious as an accompaniment to meat or fish.

1 pint tomatoes
2 1–2 tablespoons flour
2 1–2 tablespoons butter
1 teaspoon sugar
2–3 teaspoon salt
A little pepper.

Boil tomatoes gently for a few minutes and press through a sieve. Melt butter in a saucepan, stir in flour and when smooth add the tomatoes and stir until it boils.

SALADS AND SALAD DRESSINGS.

Nearly all vegetables may be served in the form of salads but the salads made with the raw salad plants are much more appetizing and more generally liked than those made with cooked vegetables. There are two or three things to be careful of in making salads:—

All ingredients should be very cold.
All raw vegetables must be fresh and crisp.
Combine few flavors and only those which blend.
Do not mince the material too finely.
Mix in dressing with a silver fork.
Serve as soon after making as possible.
Garnish daintily but simply.

There are three types of salad dressings—cooked, French and Mayonnaise Dressings. Of these, without a doubt, the French Dressing is the simplest and most wholesome but is not used to a very great extent in Nova Scotia, probably because olive oil does not seem to meet with the favor it deserves. There is nothing more delicious than crisp tender lettuce served with a French dressing but it is seldom seen on our tables.

French Dressing.

1–2 teaspoon salt
1–4 teaspoon pepper
2 tablespoons vinegar
4 tablespoons olive oil.

Mix ingredients and stir until well blended. French Dressing is very easily prepared and can be made at a moment's notice. As this Dressing is given it is right for lettuce, cooked asparagus, cauliflower, etc., and may be modified to suit other vegetables and tastes. Cream may be substituted for the oil but the salad will not be so rich.

Salad Dressing No. 1 (cooked).

2 eggs
1–4 cup vinegar
1–4 cup water
1–2 teaspoon salt
1–2 teaspoon mustard
1 to 2 tablespoons sugar
1 to 2 tablespoons butter
Suggestion of cayenne.

Mix dry ingredients together. Stir in vinegar and water and heat. Beat eggs slightly in round bottomed bowl and add hot liquid very slowly stirring constantly, stand bowl in pan of boiling water and beat until the mixture coats the spoon. Remove and add butter. When cool fold in one-half cup whipped cream or thin down with milk if too thick.

Salad Dressing No. 2 (cooked.)

3–4 cup milk
1 tablespoonful flour
1 egg
1–4 cup vinegar
1–2 teaspoon salt
1–2 teaspoon mustard
1 to 2 tablespoons butter
1 to 2 tablespoons sugar
Touch of cayenne.

Mix dry ingredients and stir in scalded milk. Return to double boiler and stir until it thicken. Beat eggs and add part of hot mixture to it, returning all to the heat. Cook about one minute longer, add butter and stir in vinegar gradually or put all ingredients in top of double boiler, place over boiling water and beat with a Dover beater until thick and creamy.

Mayonnaise Dressing.

1 teaspoon mustard
1 teaspoon salt
1 teaspoon powdered sugar
A few grains cayenne
Yolks two Eggs
2 tablespoons lemon juice
2 tablespoons vinegar
1 1–2 cups olive oil.

Mix dry ingredients, add egg yolks and when well mixed add one-half teaspoon vinegar, add oil gradually, at first drop by drop, stirring constantly. As mixture thickens thin with vinegar or lemon juice, add oil and vinegar or lemon juice alternately until all is used, beating or stirring constantly. If oil is added too rapidly, the dressing will have a curdled appearance. A smooth consistency may be restored by taking yolk of another egg and adding curdled mixture to it slowly. It is desirable to have bowl containing mixture placed in a larger bowl containing crushed ice, to which a small quantity of water has been added. Olive oil for making mayonnaise should always be thoroughly chilled. Mayonnaise should be stiff enough to hold its shape. It soon liquefies when added to meat or vegetables, therefore it should be added just before serving time. A silver fork, wire whisk, small wooden spoon or Dover egg beater may be used as preferred to mix ingredients.

CO-OPERATION.

In these days of high prices for foodstuffs it may seem strange that there should ever be any difficulty in finding a market for a crop after it has been grown. Yet the marketing of vegetables, especially the perishable kinds, often causes the grower much trouble, expense and anxiety. Sometimes the loss through the spoiling of his crop before a suitable market can be found in enough to discourage him from growing a particular crop again. Possibly at the very time when he finds it difficult to dispose of his produce articles of the same kind are being imported and sold to customers of whose wants he is not aware.

To secure and to hold a profitable trade the producer needs (1) to offer a first class article, (2) in sufficient quantity and (3) to provide a continuous supply. The goods must be at the place where they are wanted at the proper time. To bring about these conditions necessitates a careful study of the marketing end of the business and a careful use of the knowledge thus obtained. The best way in which to do this is by means of a system of co-operation.

If the vegetable growers of Nova Scotia were organized into co-operaitve companies with business managers appointed to look after the sales, full advantage could be taken of the markets at their disposal. The kind and the amount of vegetables needed in any market from day to day or week to week could be known throughout the year. Growers could be advised what to grow. The produce could be placed on the market as it was wanted. Wasteful competition and the glutting of markets with perishable goods could be avoided and much of the present loss through faulty distribution saved. The cost of selling could be reduced to the advantage of the producer and consumer.

There are many such organizations of vegetable growers in the United States. Some of them are for growers of a special crop such as the Long Island Cauliflower Growers' Association while others are of a more general character, as the Southern Produce Exchange which handles a variety of vegetables. Some have few members with a small paid up capital, others are large concerns with many members and a capitalization of thousands of dollars. Some employ their managers on salaries, some on a small commission on net sales. The telegraph lines are regularly and freely used to keep in touch with the market conditions. It is, no doubt, because of their effective organization that these growers are able to invade our markets at times with their goods at such low prices.

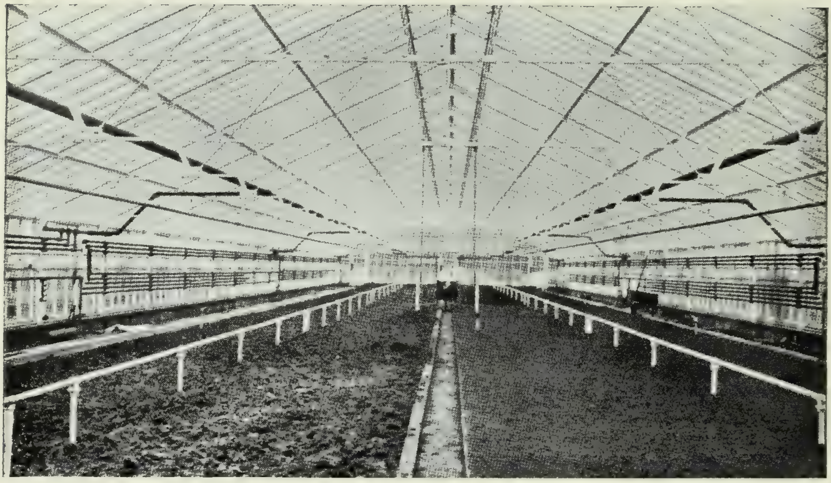
Co-operation has been tried with success in the fruit and dairy industries of this province.

There are thirty-five co-operative fruit companies in operation in Nova Scotia to-day. These companies exist primarily for the purpose of marketing apples but they also sell potatoes and a few other vegetables and buy such supplies for their members as fertilizers, spray mixtures, flour, feed and seed. The total business which it is expected will be done this year by these companies through their central office in buying and selling is estimated at $1,342,000. made up as follows:—

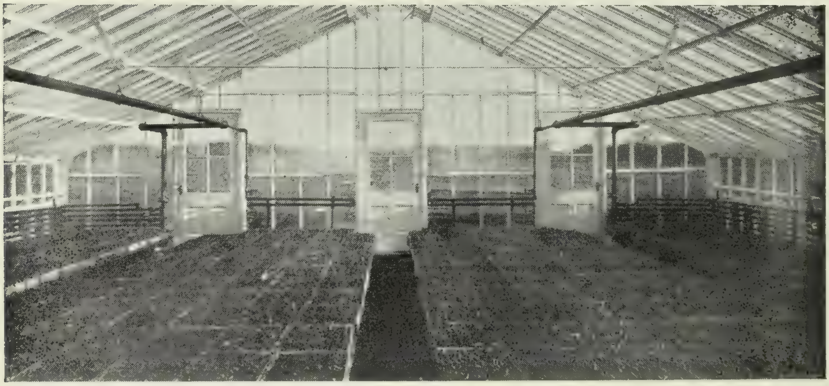
Apples	$1,050,000
Potatoes	115,000
Supplies; fertilizers, feed, flour, spray materials, seeds, etc	175,000
Insurance	2,000

The expense incurred in making these purchases and sales, it is estimated, will only amount to 1 1-6 per cent of the total business done. The cost of selling apples will only amount to about 3 cents per barrel where formerly it was said to cost 20 to 35 cents per barrel. The savings in the purchase of supplies is sufficient to more than pay the whole cost of selling the apples.

Just as co-operation has resulted in advantage to the apple growers in Nova Scotia so it has resulted to the advantage of the vegetable growers where it has been tried in the United States. There is no reason to think that it would work differently for our vegetable growers in this province.



Interior of 40′ house erected without columns for growing cucumbers. The flat iron trusses are perforated in order to conveniently cord the house for the vines.



Interior of an iron frame house 35′ wide and 150′ long. One of nine owned by a large canning company in Central New York, used for growing tomato plants for farmers.

An act of the Provincial Legislature which was passed in 1907 makes the formation of co-operative companies easy. It provides that any number of persons, not less than five, may form themselves into a company for the purpose of—

(a) Buying, selling, bartering, taking on consignment, dealing in and packing fruit, fodder and other farm produce;

(b) Buying, selling, leasing, erecting, improving, managing and operating storehouses, warehouses and other buildings which may be incidental or conducive to the purposes of the Company, and carrying on the business of warehousemen in connection therewith;
by subscribing their names and addresses to a Memorandum of Association in the form "A" in the Schedule to this Act, and otherwise complying with the requirements of this Act in respect to registration, provided that no subscriber shall take less than one share.

A Memorandum of Association in the form "A" in the Schedule of this Act with full directions for the formation of a co-operative company may be obtained on application to the Registrar of Joint Stock Companies, Halifax.

P. J. S.

GREENHOUSES FOR VEGETABLE GROWING.

By F. J. Elder.

Vegetables have been grown under glass for many years, and notwithstanding the fact that better shipping facilities now prevail, both as regards speed and care of perishable goods in transit, there is a decidedly increasing demand for vegetables grown under glass.

In the northern states of the United States competition is felt with vegetables grown out doors in the southern states, but even there the demand for fresh cucumbers, tomatoes, lettuce, radishes, cauliflower, rhubarb, etc. during the winter and spring months, makes hot house vegetables decidedly profitable, and many vegetables not now grown commercially under glass will without doubt be produced in many greenhouses in the near future.

In Canada the competition of Florida, Carolina and Virginia vegetables is not felt to any such degree as in northern United States, and here with the constantly increasing population there is promise of more hot house vegetables and need of more greenhouses.

Large greenhouses are recommended for vegetable growing as well as for flower growing. Large houses are cheaper to build than small houses. They are cheaper per square foot of ground covered, and cheaper per square foot of glass. Large houses are cheaper to heat per square foot of glass than small houses. They require a little less radiating surface per square foot of glass because of greater cubic contents enclosed, and consequently less heat units and less coal are used.

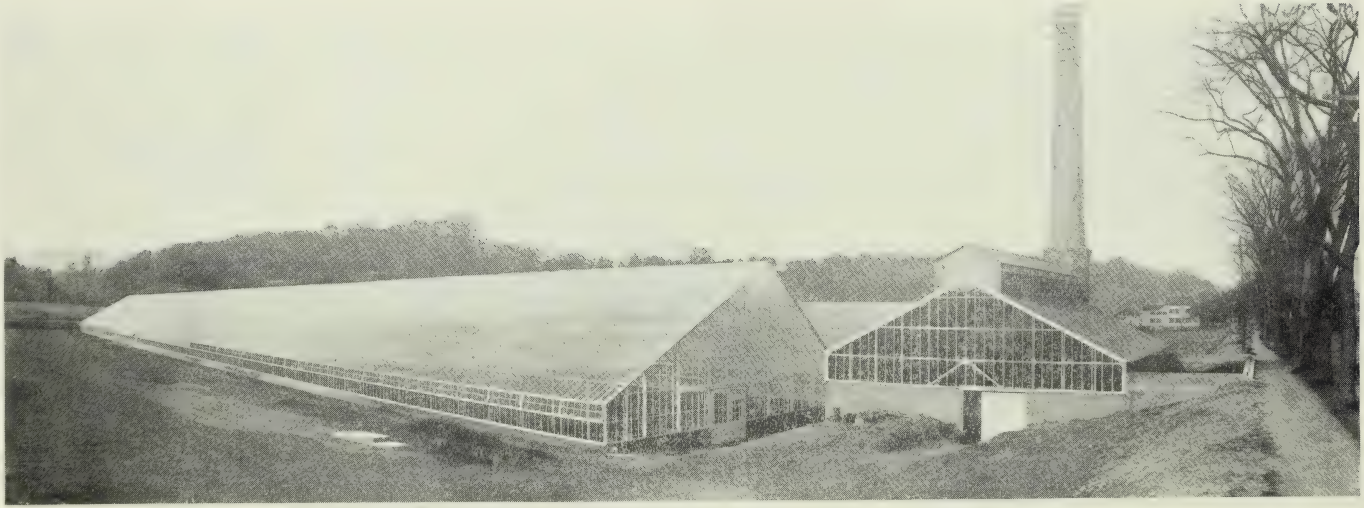
Large houses are cheaper to work, simply because they are larger. There is more room, and plowing is practicable. In smaller houses plowing is not possible.

Vegetable greenhouses for commercial purposes should not be less than 40 feet wide, and may be built in safety 100 feet wide, and of proportionate lengths. The size, of course, depends considerably on the demand for the product.

The sides should be six feet high, or higher, and there should be four runs of ventilating sash and shafting, two lines at the ridge, and one in each side wall. The ventilating sash need not be very wide (or deep). In fact, it is well to consider that narrow sash opened well out by long arms and rods, give more air than wide sash opened slightly, and it would be considerably easier to operate them, as small sash are lighter than wide ones. A very common mistake is that of placing large side sash, and then never opening them any wider than a narrow sash would be opened. The roof sash should not be wider than 36 inches, and the side sash not wider than 30 inches. If single stationary lights occur between every two consecutive sash, both at the ridge and on the sides, there would be no trouble from buckling sash, such as often occurs with continuous sash when they swell in damp weather.

The side ventilating machinery should be arranged so that operating wheel handles will not protrude unnecessarily into the house. The ridge vents should be operated by shafting with racks and pinions and chain operated gears for long runs. By the use of this machinery 200 feet and more of shafting and vents may be operated from one point.

Even span roofs are satisfactory for large houses in nearly all cases. The roof pitches should be from 26 1-2 degrees to 30 degrees. With less than 26 1-2 degrees pitch, the roof is liable to leak more or less in driving rains.



Two houses at Revere, Mass. The rear house is 50′ wide by 600′ long. The other is 60′ wide by 525′ long.

The lay of the house is not so important with wide houses as with narrow ones, and as the roof is high, the shadows cast by structural members and bars are well broken up.

The best construction is without doubt the **Flat Rafter Iron Frame** This construction is a little higher in first cost than any other, but is doubtless the cheapest in the end, as repair and maintenance costs are very light. The extra cost of iron frame houses is in the material, not in the labor. As a matter of fact, the labor required to erect iron frame houses is cheaper than that required with any other type of construction. In the States, iron frame houses are manufactured and often erected by the owners or by local mechanics. The metal work is all manufactured, cut to measure, drilled, and punched and ready to be bolted together, with the least difficulty. The wood work is, so far as is possible, also prepared to fit the metal frame. Rafters are constructed of flat steel 1-2 inch thick by three to four inches or 4 1-2 inches wide, depending on the size of the house and the consequent roof load to be sustained and wind pressure to be resisted. Wrought iron foot pieces of 1-2 inch guaranteed wrought iron, and of same width as the rafters are placed in the sides and ends of the greenhouse. They are placed on concrete footings and firmly bedded in concrete piers. The foot pieces extend three feet below grade to the eaves line on the sides of the house, and to the gable rafters at the ends of the house. These foot pieces are placed 8 feet 4 1-2 inches apart. The steel rafters begin from the foot pieces at the eaves line and continue until they meet at the ridge, where they are secured by wrought iron brackets. These brackets also serve as a support for the ridge. The rafters are secured to the foot pieces by gusset plates.

The eaves plates are constructed of galvanized angle iron. These angle iron eaves plates are secured to the rafters by cast iron fittings, and the eaves plates are provided with sash bar clasps. These clasps, bolted to the plates, receive the lower ends of the sash bars.

This construction casts very little shade, is stronger than any other known construction, and as one flange of the angle iron is subjected to the inside temperature of the greenhouse, icicles do not to any great extent form on the eaves plate. This is an important point. With the large wood eaves plates, considerable shade results. and as wood is a non-conductor, the inside temperature of the house does not free the wood eaves plates from icicles The falling of icicles from the eaves plate through the side glass often causes a serious loss of glass in wood houses.

The side walls of these iron frame houses are usually constructed of concrete, not necessarily over four inches thick. These walls are not supporting walls, but merely panel or curtain walls built between the foot pieces or side posts, and resting at each end on the piers around the foot pieces. A cast iron sill is placed on the concrete side and end walls and bolted to the uprights or foot pieces of the rafters. Angle iron purlins are placed on each side of the roof, and properly spaced between the rafters. These purlins support the bars. The sash bars are not made any heavier than is necessary, as they are not to be considered as structural members. They merely afford a setting for the glass. Therefore by the use of the iron frame construction, smaller bars are used and more light is possible inside the greenhouse.

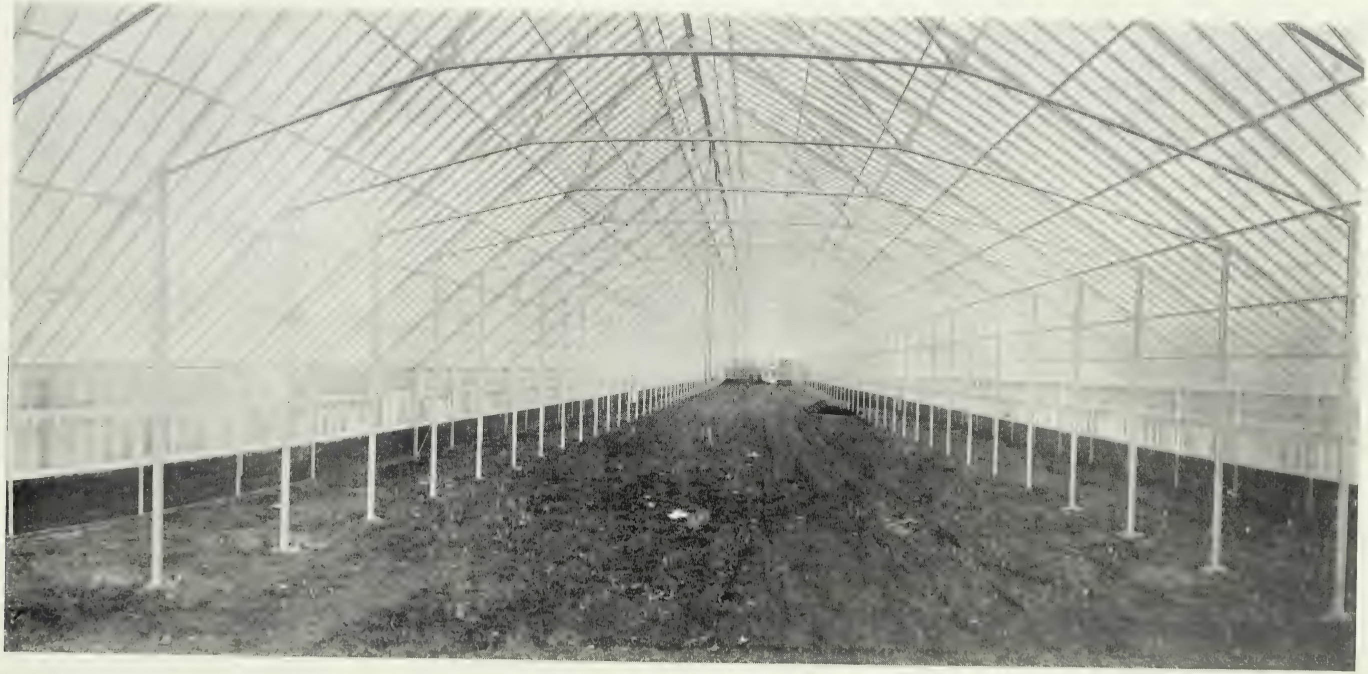
For columns to support the rafters, steel angles are riveted together back to back, thus forming a "T" shaped column. These are bolted to the rafters by gusset plates. The columns are set in concrete piers in the same manner as with the side posts.

The sash bars, rafter caps, and other wood work in the iron frame houses are always of cypress, as this wood has proven to be the most durable for greenhouse purposes.

Large houses are more effectively and more cheaply heated by steam than by any other method, and for houses up to 50 feet in width, heating coils should be placed on the sides of the house only. By this method there are only two coils to be given attention. The work of installation is light, and there is no piping in the center of the house to interfere with the working or with plowing.

The simplest system is that in which the condensation is returned to the boiler by gravity, and the boiler, or boilers, must be therefore placed in a pit, so that the water line will be a little lower than the lowest point in the radiation. It is not absolutely necessary, however, to excavate a very deep pit for boilers, as many successful greenhouses are operated with the boilers on grade. In such cases, automatic pumps and receivers are used, or steam traps, to return the condensation to the boiler.

At Revere, Massachusetts, in 1911 and 1912, two large iron frame houses were built, one 50 feet by 600 feet long,—the other 60 feet by 525 feet long. The sides of both



The interior of the larger house at Revere, Mass. The sides are 8′ high The distance in the centre between the columns is almost 40′.

houses are eight feet high. The distance in the center between the columns was almost 40 feet, thus allowing ample room for plowing.

In the fifty foot house the owner has produced over one hundred tons of tomatoes in two crops within the last two years, in each case cutting the first fruit late in June or early in July, and receiving for them an average price of ten cents per pound. It can be readily imagined that working in such houses is not expensive. The labor required to produce such crops and the heating cost is also low.

At Irondequoit, N. Y., a small town in the vicinity of Rochester, and the center of the great vegetable growing district in that part of New York State, the forty foot house is favored. Here five or six iron frame houses with heavy iron trusses, and without columns, were built within the last two or three years. These houses average about 150 feet in length. Some of the flat iron members of the trusses are drilled or punched for convenience in stringing the house for cucumber vines.

A large canning company in the central part of New York State operates five or six large plants, which are distributed throughout the state. Five such houses were built at Albion, and four at Medina. These houses were built by the canning company for the express purpose of furnishing tomato plants to the farmers. The company had been confronted with the problem of feeding their canneries without flooding. The difficulty was that the farmers always brought in their crops at one time, and by building these houses, they were enabled to furnish the farmers with strong stocky plants at a price very little above that of the cost of producing. They are also able thereby to prevent flooding the canneries.

The steadily increasing population in Nova Scotia and New Brunswick will doubtless furnish an ample market for vegetables, and will make the building of large vegetable greenhouses a necessity in the near future.

STRAWBERRY CULTURE.

By L. D. Robinson, Berwick, N. S.

Introduction,

Without doubt, the strawberry is the most popular fruit produced in Canada—the most popular because it is the best. No other delicacy can compare with it, except strawberries and cream. Henry Ward Beecher but voices public sentiment when he says: "Doubtless had God tried to do so He could have made a better berry than the strawberry, but it is equally certain that He never did." The strawberry is the gardener's pride, the epicure's delight and a joy to all.

It is the first fruit to ripen and thus it is welcomed by us as a pledge of the good things to follow. Not only is the strawberry the best fruit of all but it is within the reach of all. Nothing planted in the garden gives surer returns for labor. A small patch of strawberries well cared for will supply the wants of a family with a luxury unsurpassed.

History.

Of all the fruits, the strawberry has the widest range. In its wild state it is found widely scattered over the temperate zone. In Canada, its domain stretches from the 60th. degree in the north to the boundary on the south; and from the Atlantic on the east to the Pacific on the west and where the wild varieties abound, the cultivated are sure to flourish.

The evolution of the cultivated varieties is somewhat modern in comparison with most of our cultivated fruits. Though under cultivation in gardens for centuries, little improvement had taken place in the strawberry previous to the 19th century. It was still little better than the wild varieties.

In the early part of the 19th century, however, a marked advance was made by mating the Chilian, a wild species inhabiting the west coast of America, with another wild species inhabiting the east coast. The result was Keen's Seedling, exhibited in London in 1821, as the finest berry of the age. Keen's Seedling became the ancestor of most of the English varieties.

But the English varieties did not take kindly to American soil, and attempts were made, on this side, to originate a variety better suited to our soil, and climate. In 1843 the Hovey appeared. This berry was a wonderful improvement on all varieties hitherto known in America. and it held first place until outclassed by the Wilson in 1857.

This wonderful berry held its place as the best commercial variety for more than a quarter of a century. Finally, however, it, too, was forced to give way to still more wonderful creations. To-day there are hundreds of varieties that far excel the Wilson in size, quality and productiveness.

During the past one hundred years the strawberry has increased in size, from that of a cherry to the size of a plum; and improved greatly in quality and productiveness. We still are, however, looking for the ideal strawberry.

Soil.

The strawberry is not fastidious as regards soil, providing it is well drained, and not likely to bake. It usually succeeds well on any soil suitable for growing potatoes. Its natural place in a rotation is after a hoed crop.

No single factor in strawberry growing is so important as the maintenance of an abundant supply of moisture, especially during the fruiting season. It is important, that the soil for strawberries should be naturally moist; still more important that it should contain an abundant supply of humus, for it is upon that reservoir of moisture that the strawberry must depend in times of severe drought.

Fertilizers.

The soil for strawberries should be made much richer than for most farm crops. Not that the strawberry removes larger quantities of plant food from the soil than these—quite the reverse. A ton of timothy hay, for example, removes fully five times as much plant food from the soil as a ton of strawberries. Yet the soil must be made very much richer for growing strawberries than for timothy hay. This is doubtless accounted for by differences in habits of their growth as well as by the very heavy demands made upon the strawberry plant, in the latter part of the fruiting season.

The value of humus in conserving soil moisture has already been pointed out; but humus does more; it warms, sweetens and mellows the soil. By its decomposition, nitrogen, phosphoric acid and potash are set free, and last, but not least, it is a liberator of the dormant plant food in the soil.

Stable manure owes it great superiority as a fertilizer, not so much to the plant food it contains, as to its rich supply of humus making material. No single fertilizer surpasses stable manure in strawberry growing. When used alone, 30 or even 40 tons to the acre may be used to advantage. When the soil already contains sufficient humus, 15 tons of stable manure supplemented by 500 lbs. of bone, 500 lbs. acid phosphate and 300 lbs. muriate of potash should give equally good results. When the ground contains very large supplies of humus from previous heavy applications of stable manure or plowing in cover crops, excellent results can be had from the use of 1000 lbs. bone, 1000 lbs. acid phosphate and 400 lbs. muriate of potash to the acre.

Preparation of the Soil.

The strawberry crop is one of the most expensive that the farmer can raise. It requires heavy applications of fertilizer, costly plants and extensive cultivation. Thus the preparation of the seed bed, always important, becomes doubly so in strawberry culture. Deep plowing, late in the fall, is recommended partly because it improves the tilth of the soil and frees dormant plant food and partly because it exposes white grubs and wireworms to the frost.

The plot should be plowed again in the spring, as soon as the soil is fit and thoroughly pulverized to a depth of several inches. It should now be levelled with a heavy plank drag, which is much better for this purpose than the roller; for the drag crushes lumps while the roller sinks them.

Plants.

It usually pays the grower to produce his own plants; for home grown plants as a rule are cheaper, fresher and truer to name than when bought. The best plants are those taken from the new bed nearest to the parent plant: the worst, those taken from the old bed. It is best, on the whole, to dig up the entire row and then sort out the weaker plants. Cutting the roots back to about two-thirds their length will facilitate planting and lessen transpiration of moisture.

When plants come from a distance, they should be immediately unpacked and moistened; and in case the ground is not ready to receive them, heeled in and the soil pressed firmly about their roots.

Pollination.

Occasionally, complaint is made that, "my bed produces nothing but nubbins." Sometimes this condition is brought about by late frosts, or too much rain during the season of pollination. But lack of stamens to produce sufficient pollen is usually the explanation.

There is sex in the vegetable as well as in the animal kingdom. The male organs of flowers are called stamens, the female organs pistils. The pistil is adhesive and receives grains of pollen or flower dust from the stamens through the agency of the wind or insects, and thus the ovary is vitalized, and the fruit begins to develop.

When blossoms contain both stamens and pistils, they are termed bisexual, staminate or more commonly, perfect. When blossoms contain pistils, but lack good stamens, they are said to be pistillate or imperfect.

It is very important, when planting an imperfect variety of strawberries, that every third or fourth row should be of some perfect variety corresponding in season with the former. It is often better to use a mixture of fertilizing varieties rather than a single variety.

Planting.

The writer has found the following method of planting rapid and in every way satisfactory. Rows are carefully staked off, three feet apart, and a cod line stretched tightly between the end stakes close to the ground. A man with an ordinary round pointed shovel follows this line, making holes 15 to 24 inches apart, according to the tendency of the variety to produce runners. In making the holes he drives his spade down vertically to a depth of about five inches and in the act of withdrawing it pulls it toward himself so as to deposite a wedge of earth as near the hole as possible.

A boy with a basket of prepared plants follows, dropping a plant close to the vertical side of each hole. The setter deftly grasps each plant between thumb and fingers of the left hand, places it against the vertical side of the hole with the terminal bud just above the surface of the ground; and then with his right hand forces the wedge of earth into its place. A quick motion in transferring the plant to the hole, will usually suffice so far as spreading the roots is concerned.

Cultivation.

If the object in the preparation of the seed bed is to render the soil congenial to plant life, then the aim of all subsequent cultivation should be to maintain those conditions. In strawberry growing, cultivation should begin as soon as planting has been finished. At first, the cultivator should be run somewhat deeply so as to re-mellow the soil trodden down by planting. Later, cultivations should be shallow; the main object being the destruction of germinating weeds, and the maintenance of a dust mulch. Experience has shown that this result is best obtained by running the cultivator lightly at intervals of ten days and after each rain.

When the rows are evenly spaced very little hand work will be necessary until the runners need attention. These should be trained into the rows and a little earth placed on them to hold them in place, until a row has been formed eighteen inches wide, with plants four inches apart, All later runners should be destroyed. It is difficult to keep matted rows free from weeds, but it must be done. A bumper crop of berries was never taken from a weedy patch.

Spraying.

Leaf blight or rust is yearly becoming more troublesome, especially on light sandy soils. Much of the damage usually attributed to drought is caused by this disease. For, like drought, strawberry blight causes the leaves to wither and the berries either to ripen small or dry up. The first indications of this disease is the appearance of circular, reddish spots on the leaves early in the season. As the disease develops, the spots grow larger and finally a new crop of spores is produced that in turn attack the leaves.

Bordeaux mixture has proved very effective in controlling this disease. It must be borne in mind that this remedy is preventive, not curative. It should be applied thoroughly in the spring, just as the new leaves start and again when most of the blossoms have fallen. The strength recommended is 4-4-40. Young plants, too, are often greatly benefited by two or more applications of Bordeaux during the growing season.

Mulching.

Complete success in strawberry growing cannot be attained in Nova Scotia unless the patch is well mulched. Mulch is necessary both as a winter protection from freezing and thawing and also as a summer protection from drought.

The best materials for this purpose are rushes, straw and coarse hay in the order named. The mulch should be applied at the rate of not less than three tons to the acre, as soon as the ground is frozen sufficiently to bear a team. Great loss frequently results from neglect of this caution.

In the spring, when the plants show signs of growth, part of this covering should be raked between the rows. A slight covering, that the plants can push their way through, is of great benefit in times of drought.

Varieties.

In the choice of varieties, the soil, the climate and the market must be considered. Varieties that under certain conditions have proved profitable may under changed conditions prove worthless. The beginner should be guided in his choice more by the advice of growers in his vicinity than by catalogues. If his land is early, he may find it profitable to plant some of the early varieties, Warfield, Beder Wood, Senator Dunlap. On the other hand if his land is late, he may find it more profitable to plant some of the later varieties, Sample, William Belt, Commonwealth or Brandywine.

The writer has found the Senator Dunlap a very profitable berry. It is among the earliest and best. It is vigorous and a great yielder. It produces large berries and does not blight badly. It has perfect blossom.

Profits.

In estimating the profits from growing an acre of strawberries, as given below, it has been assumed that at least half of the value of the manure used will be available for future crops. No credit is given for the undoubted value of the mulch and vines as humus making materials for succeeding crops. Four thousand quarts to the acre is considered a fair average crop in the preceding article. Ten cents per quart is the average net returns received by the writer for the past two years.

	Dr.	Cr.
To Rent of land for two years	$ 14.00	
Value of fertilizer used	30.00	
Hauling and spreading 30 tons stable manure	15.00	
Plowing, harrowing and levelling	8.00	
Plants	30.00	
Planting	10.00	
Cultivating and weeding 12 times	30.00	
Mulching	20.00	
Crates	19.00	
Boxes	14.00	
Picking and hauling to station	60.00	
Balance, (profit)	150.00	
By 4000 boxes at $.10		$400.00
	$400.00	$400 00

BEE KEEPING.

By Evan D. Craig.

For many years bee keeping has been prosecuted in this province in a desultory way by a few devotees of Natural History. Not until very recent times has it been demonstrated that it can be made a successful avocation, if not a paying industry, as has been done in Ontario and portions of Quebec, where many tons of honey are produced annually, and where the industry is fostered by the local governments.

That it can be made a lucrative source of income has been shown by a few enthusiasts of Cumberland County, a section of the province that might not be regarded as enjoying as favorable conditions for this industry as do those sections in which nectar-secreting flowers grow abundantly. Nevertheless, this season the production of four small apiaries situated within a distance of five miles, set at naught any such misconception. The following is but a sample record of recent years:—

APIARY	Colonies Spring Count	Extracted Honey	Comb Honey	Increase
Miss Julia Corbett	13	1040 lbs.	200 Sections	10 Colonies
B. W. Baker	20	1025 "	650 "	10 "
Government Farm (Nappan)	10	1072 "	77 "	9 "
Craig Brothers	16	1000 "	500 "	11 "
	59	4137 lbs.	1427 Sections	40 Colonies

Partial view of vegetable and flower garden and apiary belonging to Mr. Inglis C. Craig, Inspector of Schools, Amherst, N. S.

When it is known that two pounds of extracted honey can be produced for every pound of comb (one section) there is a remarkable uniformity in this record. In pounds of extracted honey the total is equivalent to 6991 or an average of 118 pounds per colony.

As has been said this result is typical of many other seasons. It is seldom that there is a complete failure. There is as often a failure of hay. In fact a good crop of hay denotes a good honey harvest. Clover fails now and then but the writer has observed that invariably a shortage of this, the best honey producing plant, is generally followed by a flow of autumn honey gathered from many sources, the chief of which are buckwheat, golden rod and aster.

The honey from the fruit bloom may be regarded as a negligible quantity as far as direct income is concerned and moreover, contrary to general opinion, it is of an inferior grade to that from clover. It comes, however, at a most opportune time to give impetus to the rearing of young bees to gather the honey from clover, which, in the northern part of the province, begins to yield about the first of July and in the Valley ten days to a fortnight earlier. That beekeeping has **not** been a paying industry to a small element of our rural population that has engaged in it is chiefly due to the problem of wintering. Hundreds in this province have attempted to keep bees, with the same unvarying result,—entire loss of the bees, or such dwindling in the population of the hives that they were unable to secure any surplus stores the following season. All would go well with them perhaps for a year or two when an autumn season would come bringing a secretion from the leaves, known as honey-dew that was not good food for bees to winter on. Dysentery followed with its baneful effect, exhaustion of the bees. This has so discouraged many that they never attempted to keep them again.

A few enthusiasts, recognizing the possibilities of the industry if this difficulty could be overcome, became serious students of the wintering problem. The same difficulties had been experienced in the State of Michigan, whose flora is nearly identical with ours. There the winter problem was solved by extracting, at the end of the honey season, every drop of native stores and feeding back a syrup made by mixing two parts of granulated sugar with one of warm water.

It has been tried in this province for five years, long enough to put the practice beyond the experimental stage and the results have been the happiest. Instead of finding pecks of bees dead on the floor of the cellar room in which they are kept, now there are only cupfuls, a natural death rate.

There is, however, an erroneous notion abroad that all one has to do with bees is to set a colony in the corner of the garden and it will contribute to the storehouse without any attention. Do not keep bees if you think so. They need attention often from April to October. Just as intelligence will count in the handling of any stock in animal husbandry, so will intelligent manipulation of bees enlarge the profits.

A person would have to pay $10. for a good strong colony of Italian bees in Ontario. This is the price asked here at Amherst where there will be ten or fifteen colonies for sale in the spring. One might be able to get a colony for $5. or $6. in the Annapolis Valley if they survive the way of wintering practised there, which is always uncertain. They cannot be kept outside in single walls through the winter without serious loss. The best place in this latitude is a cellar.

From May 15th to June 1st is the proper time to buy a hive of bees. Then it should contain at least six frames out of the eight full of brood. The bees should be given a southern exposure and be protected from the north winds by a board fence, hedge or building. In this country they do not require the shade of trees. In early spring they often suffer from want of stores; then a little feeding is necessary. However, after spring bloom appears there is little concern on this score, unless weather conditions are extremely bad.

Swarming.

To know when to give bees more room is one of the fine points of the business. Favorable weather in spring might give a rush of honey when there was no room to store it and the consequence, swarming. If a person buys one colony he should secure another empty hive filled with frames in which foundation is inserted. In this he can place the prime swarm. Indeed it is prudent to have two or three extra hives on hand with supers complete for emergencies.

In getting a hive of bees one generally thinks only of their product, the most delicious and wholesome food in nature's storehouse. As an article of diet, its merit is not sufficiently known to our Maritime people. But, however large their products—and the record of some of the colonies given compares favorably with the net incomes from some of the more prominent industries of the province—**these** are but secondary benefits. "Without the kindly offices of insects our fruit crops would cease to be, and the flowers which abound would no longer bloom." It is presumed that there is no one among our horticulturists so ignorant of botany that he would challenge the function performed by insects in the cross fertilization of flowers. Therefore, it is to be inferred that he will not destroy his best friends by spraying with arsenical mixtures trees in full bloom. In Ontario and British Columbia it is an offence punishable by law to spray trees when in full bloom. This protection is asked in every beekeeping country of importance and its propriety is never questioned by advanced horticulturists, who know that strong poisonous mixtures spread upon the sensitive organs of the flower will destroy them.

In this province every year sees an increasing area set to fruit trees and it is just a nice question if insect life, dependent on nectar and pollen for an existence, is able to perform the duty of pollination. The fruit grower who cannot keep a few colonies himself, will do well to encourage others who do not make fruit a specialty.

The late Dr. James Fletcher of Ottawa, Dominion Entomologist, has said:—"It can be shown that owing to its size, weight and habits, no insect is so well calculated to insure fertilization of fruit bloom as the honey bee, which flies rapidly from plant to plant and, by running over the flowers in search of pollen or nectar, brushes off the pollen and carries the vitalizing element on the hairs of its body to the next flower visited."

It is a fact well known to any one who has had experience in the keeping of bees that they will gather honey from one source largely to the exclusion of others. They are evidently looking for the best. When pressed in the spring for pollen without which no brood can be raised, they will not spurn the pollen on the alder but when the pussy willows' bloom appears they will not touch the less nutritious food.

This habit, Dr. Fletcher held, "is manifestly advantageous to the plants on account of the pollen which is carried by the bee, being of the kind necessary for the fertilization of its flowers which could not be affected if the pollen were that of some other kind of plant."

A great advantage in the work of the bee over that of other forms of insect life is that it begins in the early spring months when many other insects, abundant later in the season, have not emerged from their winter sleep.

Apart from the two offices filled by the bee there is something in its life and habits which must appeal to anyone who likes to get close to Nature's heart. He is dull indeed, who will not be interested in observing the order of their little life, the highest in the insect world.

Aids in Beekeeping.

There is a Maritime Bee Keepers' Association of which Mr. B. W. Baker is president and Evan D. Craig, Amherst, is Secretary-Treasurer. Membership costs one dollar. One privilege of this is a free copy of "Gleanings in Bee Culture" for one year—twenty-six issues—which alone would cost more than this subscribing directly.

Dr. Hewitt, Dominion Entomologist, Ottawa, has issued a good pamphlet on Bee Keeping and a post card to him will bring a free copy. The best text on Bee Keeping is A. I. Root's "The A. B. C. of Bee Culture, 1913 edition." It would adorn any library.

630.8
N85
1914.

AUG 30 1915

Annual Report

OF THE

SECRETARY FOR AGRICULTURE,

NOVA SCOTIA

FOR THE YEAR 1914

(*Printed by Order of the Legislature.*)

HALIFAX, N. S.
Commissioner of Public Works and Mines,
King's Printer.
1915

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AGRICULTURE.

REPORT OF THE SECRETARY FOR AGRICULTURE FOR THE YEAR 1914

The Honorable George H. Murray

Provincial Secretary.

Sir:—In accordance with the requirements of the Act for the encouragement of Agriculture, I have the honor to submit my Annual Report for the year 1914, which contains a statement of the work done during the year under the provisions of the Act and by authority of His Honor, the Lieutenant Governor-in-Council.

This report embraces the following documents:—

Part I.—My Annual Report as Secretary for Agriculture for Nova Scotia. P. 1.

My Report as Principal of the Agricultural College, Truro, being the ninth Annual Report of the Nova Scotia Agricultural College and Farm. P. 19.

Report of the Professor of Botany. P. 26

Report of the Provincial Entomologist and the Professor of Zoology. P. 28.

Report of the Professor of Horticulture. P. 52.

Report of the Farm Superintendent and Professor of Agriculture. P. 64.

Report of the Professor of Drainage P. 83.

Report of the Superintendent of the Poultry Department. P. 86.

Report of the Superintendent of Dairying. P. 92.

Report of Chemist. P. 120.

Report of the Superintendent of Women's Institutes. P. 124.

Part II.—Report of Agricultural Societies, Associations, Exhibitions, Meetings and Field Crop Competitions. Pp. 1 to 128.

Part III.—Series of articles on Poultry, Pp. 1 to 170

I have the honor to be, Sir,
Your obedient servant,
M. CUMMING,
Secretary for Agriculture.

Truro, Feb. 1st, 1915.

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Men's Short Course at Agricultural College, Truro, January, 1915.

PART 1.

AGRICULTURE.

REVIEW OF THE WORK OF THE AGRICULTURAL DEPARTMENT OF THE GOVERNMENT OF NOVA SCOTIA.

The Honorable George H. Murray,
Provincial Secretary,
Halifax, N. S.

Sir:—

Every one is looking to the farmer to grow bigger crops in 1915. Therefore, in presenting the 1914 report of the Department of Agriculture of the Province of Nova Scotia, which I have the honor to do, I wish to call your attention to the progressive movements under way which are discussed in this report and which lead me to believe that the farmer will unquestionably rise to the occasion in this crisis of the Empire's history.

The report includes three parts, as follows:

Part 1.—The General Report of the Secretary for Agriculture, including a resume of all the reports presented in the subsequent pages and also a brief description of the character of the season, the crops, live stock, etc. Following this are the reports of the various officers of the Department and of the College of Agriculture, in regard to whom I may explain that the majority hold dual positions as instructors in the College and as heads of divisions in the Department. Their reports cover both lines of work.

Part 2.—Report of the Superintendent of Agricultural Societies and Associations and Exhibitions, treating in detail of (a) Agricultural Societies, (b) County Farmers' Associations, (c) County Exhibitions, (d) Field Crop Competitions and Demonstration work.

Part 3.—A series of educational articles on "Poultry Raising in Nova Scotia" edited by J. P. Landry, Poultry Superintendent for the Province. This series is a continuation of the series of articles on topical subjects, which was commenced in the year 1907.

THE SEASON OF 1914.

The spring of 1914 was one of the latest in the history of the Province. Correspondents describe it as from ten to twenty days later than average. As a partial criterion, we may state that the first oats were sown on the Agricultural College Farm in 1913 on April 26th, at which time the soil temperature was 520 F. In 1914, the first oats were sown on May 13th and the soil temperature was 450 F. There was this difference, however, that after the spring of 1914 opened up, there was very little rainfall and it was possible to carry on seeding continuously, whereas in 1913, despite the earliness of the spring, much rain fell during May and work was greatly delayed. Consequently, such crops as turnips, potatoes, corn, etc., were planted in 1914 almost as soon as in 1913. Haying on the College Farm began on July 27th, nine days later than in the previous year. During the month of June and early July there was a heavy precipitation of rain and all crops that were properly put in the ground grew splendidly. From the middle of July up to November there was a light precipitation of rain. Conditions were extremely favorable for harvesting hay, oats and other crops, but the ground became too dry for the successful growth of turnips, and also for fall pasturage.

At Truro there were some severe frosts in the early part of June. July and August were free from frost. In September there were one or two light frosts, but in October quite severe frosts occurred, the minimum temperature for this month being 18.5°. The heavy frosts of October proved quite destructive to unharvested apples in the fruit sections.

The rainfall for the year was about 30 per cent. less than that of 1913, and about equal to that of 1911 and 1912. From July 1st to the end of November, over eight inches less rain has fallen than during 1913. The result is that even now, the ground is dry and unless there is a heavy precipitation before seeding next spring those fields which were not in the best physical condition for retaining moisture may be somewhat deficient in moisture content. Should this condition of affairs arise, we can only advise every farmer to do what the best farmers would in any case do, viz., begin cultivation next spring just as soon as possible in order to conserve all possible moisture stored up in the land.

The results of the whole season have been rather more favorable than 1913. While the hay crop was somewhat lighter, other crops have, for the most part been better and, the fruit farmer has gathered about 40 per cent. more fruit of much better quality than in 1913.

In the following table we present the rainfall and the maximum and minimum temperatures for each month as recorded at the College at Truro. For comparison, similar figures are included for 1913. It should be mentioned that the thermometers are kept in a small house some three feet above the level of the ground and that the temperatures recorded are consequently a few degrees higher than those which would have been recorded in some of the lower spots in the fields.

MONTH	Temperature Maximum	Temperature Minimum	Precipitation 1914	Precipitation 1913
December, 1913..........	56.5	3.5	4.38	4.86
January 1914..........	49.5	−17.5	3.5	2.96
February "	48.5	−22.	1.75	2.58
March "	49.5	7.0	1.91	4 70
April "	63.	8.0	2.1	5.93
May "	77.	22.0	1.08	2.69
June "	79.	24.0	3.45	1.49
July "	82.	35.5	2.52	2.36
August "	84.	40.	2.66	2.34
September "	88.5	31.5	2.49	3.11
October "	73.	18.5	2.68	9.21
November "	62.	3.	3.40	2.98
			31.92	45.21

TOTAL YIELD FOR 1914.

The following table, based upon the acreages of each crop as given in the Dominion Decennial Census of 1911, plus or minus the changes as estimated by our correspondents, represents the yield of the various crops for the season of 1914.

Crop	Acres	Yield per acre Bushels	Total Yield Bushels
Oats	107,156	39	4,179,084
Wheat	14,000	24	336,000
Barley	5,978	30	179,340
Buckwheat	11,348	26	295,058
Peas	213	18	3,834
Beans	969	20	19,380
Rye	1,011	25	25,275
Mixed Grains	4,443	36	159,948
Corn for Husking	142	40	5,680
Potatoes	30,847	228	7,033,116
Turnips	11,220	610	6,844,200
Mangels	1,123	504	565,992
		Tons	Tons
Hay	505,207	1.5	757,810
Corn for Forage	646	10	6,464
Other Forage Crops	1,326	10	13,260
Alfalfa	35	(Experimental)	
Flax	6		
Other roots—Carrots Parsnips, Beets	1,122		
Apples	830,000 barrels.		

The value of these field and orchard crops calculated from the prevailing market prices is $26,500,000. In addition farmers have derived an extra revenue from the profits made by feeding home grown and purchased feeds to live stock of all kinds, from which source an additional income of about $7,500,000 has been made, thus bringing the total returns of the year to approximately $34,000,000.

CONDITION AND NUMBERS OF LIVE STOCK.

Pastures throughout the season were for the most part satisfactory and live stock is generally in correspondingly good condition. The numbers have not increased as we had hoped, a matter at least partially accounted for by the tempting prices offered both for the crude products of the farm, hay, oats, etc., and for beef, mutton, etc. There is no question that a marked improvement in the quality of dairy cattle and of lambs has taken place. The improvement of the former is particularly evident in the vicinity of the creameries, which have so markedly developed in the past semi-decade. Taking as a basis the numbers reported in the census of 1911, and adding or deducting the changes as estimated by correspondents, the following table has been prepared.

NUMBER OF LIVE STOCK IN NOVA SCOTIA

Horses	67,688
Milch Cows	138,534
Other Cattle	161,300
Sheep	217,698
Swine	57,817
Poultry	1,082,632

AGRICULTURAL COLLEGE AND FARM.

Every year since 1905, when the College was formally opened, we have reported marked progress and 1914 is no exception to the rule. True, owing to the enlistment in the army of a number of our students and the general economy which is being practiced, the attendance in the regular course at the date of writing is 18 less than in the previous year. On the other hand, the Short Course which was held in January, before the disturbance occurred, was the largest ever held in the history of the institution, the enrolled attendance being 351. The progress however, is not so much along the lines of attendance as the general effect which the College is having in promoting the various branches of farming for which the Province is suited. No one can study the development of the dairy business, of improved field crops, and of other progressive lines of farming without realizing that the College is now paying back to the people of Nova Scotia every dollar and more that has been spent on the institution.

Everyone interested in agriculture will be repaid for reading the detailed reports of the Farm Superintendent, the Horticulturist, the Poultry Superintendent, the Chemist, the Dairy Superintendent and every other member of the College staff. The full reports will be found in the subsequent pages, beginning with the Principal's report and continuing with the detailed reports of the various members of the staff.

THE NOVA SCOTIA FARMERS' ASSOCIATION.

The 1914 meeting of the Nova Scotia Farmers' Association was held in Bridgewater. The 1915 meeting will be held in Antigonish. No other organization in the Province brings so many representative farmers together or gives such an opportunity for the discussion of matters pertaining to farmers' interests. It is anticipated that the big feature of the 1915 meeting will be Increased Production for 1915 from the Farmer's standpoint. A separate report of the Farmers' Association is annually issued and may be secured on application to C. R. B. Bryan, Secy. Nova Scotia Farmers' Association, Truro, N. S.

COUNTY FARMERS' ASSOCIATIONS.

In 12 out of the 18 counties of Nova Scotia, there exist sub-associations of the Provincial Organization. These Associations deal with matters of special interest to the respective counties in which they are organized. Some are doing excellent work in the carrying on of Exhibitions, Seed Fairs, etc., in the co-operative buying of improved seed and in various other lines. It is felt, however, that there is a need for a re-organization of these associations at least in some counties, so that they may become more representative and do more effective work and it has been suggested that this matter be dealt with at the next meeting of the Nova Scotia Farmers' Association. An abstract of the report of these associations will be found in part 2 of this publication.

THE NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.

This association has fathered various movements and organizations which are now doing effective work in the development of fruit growing in the Province. As each new organization becomes more or less independent of the parent organization one begins to wonder what scope for work now exists for this honorable body. The fact remains, however, that the 1914 meeting held in Kentville in January last was the best meeting ever held in the history of the association and that the 1915 meeting, to be held in Middleton in January next, promises to be at least equally successful. The 1914 report, which is published separately, is a credit to its compilers. This report together with the report for 1915 may be secured from M. K. Ells, Secy., Port Williams, Kings Co., N. S.

THE UNITED FRUIT COMPANIES.

This body does not receive any grant from the Government and does not make any report to the Department. It has, however, taken such a prominent place in the agricultural development of the fruit counties that we include a reference to it in this Annual Report. The central company with headquarters at Berwick now does business for some 42 local co-operative companies and handles over 60%

of the apple crop of the Province, a very considerable part of the potato crop and in addition purchases fertilizers, flour, feed, and other farm commodities in increasing quantities each year. No other organization in Nova Scotia has attracted so much attention in the outside world during the past two years. The manager is S. B. Chute, Berwick, N. S. and the Secretary, A. E. Adams, Berwick, N. S.

MEETINGS.

There were held during the year 215 official public meetings with a total attendance of 12750 and an average attendance of 50. Series of agricultural meetings, such as were formerly held, have been largely abandoned. They were valuable in their day, but their day seems to have passed. Whatever meetings have been held in 1914, have, for the most part, been held witn the specific idea of promoting some local enterprise such as a creamery, the organization of a Seed Improvement Centre the organization of a co-operative body, or something of that kind. Besides, in certain localities, farmers have organized themselves into clubs where they mutually discuss matters of common interest with a view to promoting the causes of the locality in which they exist. Such meetings are of immeasurably greater value than casual meetings held from time to time and addressed by outside speakers who have no personal interest in the community. Read detailed report in Part 2.

AGRICULTURAL SOCIETIES.

227 Agricultural Societies reported in Dec. 1914. This represents an increase of 8 over last year and there is an increased membership of 462. When one considers that every year since 1907, when the number of societies in existence was 160,, a gradual increase is recorded, he begins to wonder when the end will come. There is no doubt that the majority of these societies are today doing better work than they ever did and have become practically indispensable in many communities where they provide the only means of bringing in pure bred animals. When these societies were first organized, even the officials had a vague idea as to the value of good pure bred stock and consequently many indifferent bulls were purchased and little progress made. The greatest forward step which was taken was when, some seven years ago, the position of Superintendent of Agricultural Societies was created, a position which has been most successfully filled by F. L. Fuller, whose detailed report in part 2 of this publication is well worth reading.

EXHIBITIONS.

The Provincial Exhibition, Halifax, was not, owing to war conditions, held in 1914. But the other exhibitions including the Maritime Horse Show, Amherst, the Maritime Winter Fair, Amherst, and 12 county exhibitions were held as in former years. With the exception of the first, all these exhibitions were held after the war began and consequently the attendance and general interest, with some few exceptions, was scarcely up to the anticipations of the promoters of these exhibitions. At the opening of each of these exhibitions, the opportunity was seized by various public men and especially by the Hon. Mr. Murray, Premier of the Province, who attended the greater number, to talk on conditions brought about by the war and to bring before the farmers the need of bigger crops in 1915. That this work was well done is evidenced by the increased area of land plowed and the efforts which are being made along all lines to secure better seed and cultivate the land more effectively in order that the much needed crops shall be forthcoming.

In addition to the regular Provincial and County Exhibitions an increased number of Seed Fairs and Poultry Shows were held each of which has already yielded splendid results.

The interested reader is referred to detailed reports of these exhibitions and fairs to be found in the report of the Poultry Superintendent in Part 1, and of the Superintendent of Exhibitions in Part 2 of this report.

WOMEN'S INSTITUTES.

The first Women's Institute in Nova Scotia was organized in July 1913, and by the end of that year the number was increased to 14., 22 having been added in 1914, making 36 in all. The Superintendent, Miss Jennie A. Fraser, has already done an excellent work and anyone interested in the promotion of women's organizations should read her report to be found in a subsequent part of this publication. The first Annual Convention of Women's Institutes was held in Truro, in Jan. 1914, and the second convention is to be held on the corresponding date of 1915. It was extremely fortunate that when the great work of the Red Cross Society, of the Belgian Relief and of various patriotic lines in connection with the present crisis was presented to the people, that these women's organization were ready to do their part in the interests of humanity. A still more aggressive campaign will be undertaken in 1915, and with the headquarters which will be provided in the new building now under course of construction at Truro, facilities for this campaign will be much more satisfactory.

FIELD CROPS COMPETITIONS.

Competitions in the growing of field crops for specific purposes are a new development in Nova Scotia. A small beginning was made in the MacDonald-Robertson Competitions inaugurated about 1904, but the present development only dates back some six years. The specific purpose for which Field Crop Competitions in oats, wheat and potatoes are held in Nova Scotia is to secure a quantity of high class home-grown seeds for the perpetuation of these crops. It is only a few years since farmers thought that a change of seed was essential to big crops. Now we have learned that careful selection from one's own field and the consequent perpetuation of the same strains from year to year is the best.. means to ensure success in crop production. The Field Crops Competitions have proven the means of putting this idea into practice. In 1914, regularly organized competitions were held in the growing of seed oats, wheat and potatoes. The total number of entries for the year was 326, in comparison with 291 in 1913, and 137 in 1912. The result is that there is gradually accumulating in the Province a supply of home grown seed, carefully selected and acclimated which, judging from our own experiments, as well as from results observed in many parts of the Province, will lead to an increased yield per acre from the farms of the Province. In this work the Provincial Department of Agriculture has the co-operation of the Dominion Department of Agriculture for not only does the Seed Division of the Dominion Department send experts to assist in this campaign for better seed but this year they have made an appropriation of $1500.00, which added to a corresponding local expenditure has provided a very substantial amount and largely accounts for the success of the work.

We cannot conclude this part of the report without expressing our appreciation of the assistance which has been rendered our Local Department by S. J. Moore, Maritime Province Representative of the Seed Division of the Dominion Department of Agriculture.

Not alone Government support, but also private support has been received for crop growing competitions. This has been noteworthy in the Turnip Growing Competitions for boys between the ages of 15 and 20 years, in the Counties of Colchester, Cumberland and Pictou, the funds for which have been largely supplied by a Nova Scotian living in New York and by a group of men in Pictou County. The object of this Competition is to ensure a larger growth of turnips with which to feed more cattle and so develop animal industry in the Province of Nova Scotia. We only wish there were more philanthropic men interested in the farm boys of Nova Scotia who would use a part of their means to promote these valuable competitions which have already done so much to stimulate the boys of our country in improved methods of agriculture. An outstanding feature of these latter competitions is that the prize money must be used for some specific purpose such as an agricultural Education, under drainage, the purchase of live stock, etc. For full report of these competitions see part 2.

MODEL ORCHARDS.

We are now beginning to record specific results from the Model Orchard work which was inaugurated in this Province some 14 years ago. Mr. Shaw's report to be found in the subsequent pages of this volume cannot but prove interesting to anyone who is concerned in promoting fruit growing in counties other than the so-called fruit counties of Nova Scotia. Besides the establishing of model orchards, the Horticultural Department has recently undertaken valuable work in the renovation of old orchards, a report of which will be found in Mr. Shaw's article.

UNDER DRAINAGE.

No subject deserves more attention on the part of Maritime Province farmers than the drainage of farm lands. Mr. B. H. Landels, of the College staff, who has charge of drainage instruction and investigation, has published a report to be found in the subsequent pages of this volume, which tells of the work of the Government drainage machine and of the farm surveys, which have been conducted under Mr. Landels' direction. Mr. Landels reports that the great difficulty that stands in the way of draining increased areas of land is the lack of efficient and economical labor, (which however can in part be solved by the drainage machine,) and the still greater lack of the capital necessary for the purpose. The "Tile, Stone and Timber Drainage Debenture Act" of 1910, which is identical with the corresponding Act in the Province of Ontario, it was hoped would solve the difficulty. It has not, however, worked out in Nova Scotia as it did in Ontario. The Municipal Councils are very cautious in the matter. The Act was ammended in 1914 making it possible to issue debentures for sums of $100 or multiples thereof. As yet, however, no advantage has been taken of the change. We thoroughly concur with Mr. Landels in our desire to see a more practicable measure adopted, and hope that, when the money stringency is over, this will be effected.

DAIRYING.

30% more butter was manufactured in Nova Scotia creameries in 1914 than in the previous year, the product of which was 49.8% over 1912, and so the work progresses. The increase since 1910 has been 360%, Three new creameries started operation in 1914, namely Bridgewater, Stellarton and Baddeck, but the increase has been brought about not so much by an increased number of creameries as by increased production of the old creameries. So far as the development of the policy of the Department goes, the erection of the creamery at Baddeck by the Government as a demonstration creamery, has already justified the action. This is the only creamery at present in operation in Cape Breton, but its successful management promises not only to increase the prosperity of the farmers in that part of the Island but to prove the precursor of two or more creameries which if properly located will prove the means of organizing the dairy business of the whole Island of Cape Breton. We recommend everyone who is interested in progressive movements in Nova Scotia to read the report of W. A. McKay, Dairy Superintendent, which will be found in the subsequent pages of this report.

HORSE IMPROVEMENT LEGISLATION.

In accordance with the legislation of 1912 and 1913, it is now compulsory for every person, firm or company keeping a stallion for public services to have the name, description and pedigree of such stallion enrolled in the Department of Agriculture and a Certificate of such enrolment secured. Provision has also been made for the optional inspection of stallions for soundness and for the issuance of certificates in accordance with this inspection.

For purposes of enrolment, stallions are divided into three classes, as follows:

Pure Bred.—All horses whether Standard Bred, or Clydesdale or Percheron, or any other breeds eligible for registration in the Canadian National Records.

Grade.—All stallions whose sires are pure bred and registered but whose dams are not.

Cross Bred.—All other stallions to which the common appellation of "Scrub" is given.

Depending upon inspection, certificates are issued as follows: (a) Inspected and Sound. (b) Inspected and not sound, (the unsoundness being described), (c) Not inspected.

The following table contains particulars:—

Total number enrolled	269
Pure Breds enrolled	99
Grades enrolled	81
Cross Breds Enrolled	89
Class 1—Pure Bred, Inspected and Reported Sound	35
“ 2—Pure Bred, Inspected and Reported Unsound	3
“ 3—Pure Bred, Not Inspected	61
“ 4—Grade, Inspected and Reported Sound	15
“ 5—Grade, Inspected and Reported Unsound	3
“ 6—Grade, Not Inspected	63
“ 7—Cross Bred, Inspected and Reported Sound	14
“ 8—Cross Bred, Inspected and Reported Unsound	2
“ 9—Cross Bred, Not Inspected	73

Fees are as follows:—

First Enrolment (holds for one year)	$2.00
Subsequent Enrolments (Each for one year)	1.00
First Inspection for soundness (Certificate holds for two years)	2.50
Subsequent Inspection for Soundness (Certificate holds for two years)	2.00

The last inspection after a horse is twelve years old holds for the rest of the horse's life.

For the information of those who are interested in the breeds predominating in Nova Scotia, the following table is presented giving the numbers enrolled of each breed in the Pure Bred Class:

Standard Bred	43
Clydesdale	37
Percheron	7
Hackney	5
French Coach	3
Thoroughbred	2
French Canadian	1
German Coach	1
	99

It is yet too soon to give any positive results that have accrued to the horse breeding interests of the country from this legislation. The principal advantage which is observable is that those who have stallions that will only enrol in the Cross Bred or Grade classes, are endeavoring to replace them with pure bred stallions. We, therefore, have no hesitation in saying that if the horsemen of the country will stand behind this legislation for at least a few years, they will reap results in a decidedly improved class of stallions and a consequently improved class of horses available for the market.

INSECT PESTS AND FUNGUS DISEASES.

The Department has continued throughout the year its strenuous campaign against those new insect pests and plant diseases which, if they become established, will add to the cost of fruit raising and crop growing in the country and so interfere with these lines of development. Details of this work will be found in the complete and thorough report of W. H. Brittain, B. S. A., Provincial Entomologist. According to this report, despite the very thorough work of 1912-13, the number of Brown Tail Moth nests taken has increased from 11,054 in the former year to 24,156 in 1913-14. Up to the present time, 1914-15, there is evidence of a considerable reduction. It is certainly to be hoped that this most pernicious pest, against which a campaign has now been waged for seven years, since its first discovery in the Province will be repressed so that it may never become thoroughly established.

The campaign against the San Jose Scale has up to the present time proven more successful. The presence of this scale in the Province was first discovered in 1912, when 723 trees infested with living scale were destroyed. The following year, only 57 trees were found to be infested and were accordingly destroyed. In 1914, after a most careful search, the number of infested trees discovered was 3. It would, therefore, appear that this pest has been checked and we hope exterminated from the Province. Equally thorough have been the measures taken in regard to nursery stock shipped into the Province. In fact, so exacting have been the regulations that very few nursery firms have, up to the present time, been able to comply with them and consequently the amount of nursery stock imported has been comparatively small. Ultimately however, these nursery firms will get their nursery stock cleaned up and the fruit growers of Nova Scotia will have an opportunity to secure nursery stock free from all injurious pests.

Mr. Brittain has also taken charge of the inspection work which has arisen on account of the discovery of some powdery scab on the potatoes grown in the Province. Fortunately, very little of this scab has been found to exist in the potato shipping counties and as a result the export of potatoes has not up to the present time been greatly impeded. The Island of Bermuda, which adopted the same regulations as the United States, made an exception in the case of these counties and accepted potatoes bearing a certificate of inspection from the Department of Agriculture. In connection with this trade Mr. Brittain reports 15,043 barrels of potatoes inspected. Those interested in the matter should carefully read his detailed report to be found in the subsequent pages.

POULTRY IMPROVEMENT.

Following the legislation of 1911, aggressive measures have been adopted to improve the poultry industry of the Province. Poultry shows have been held, Egg Circles organized and a general propaganda of improvement carried on. Some of the work has been extremely successful but difficulties have been encountered in other parts of the work. A full report may be found in the report of J. P. Landry, Poultry Superintendent.

DOMINION GOVERNMENT APPROPRIATION FOR THE AID OF AGRICULTURE IN NOVA SCOTIA.

The Department of Agriculture of the Government of Nova Scotia received from the Dominion Government for purposes of Agricultural education during 1914, the sum of $61,144.45. In the following table will be found a statement of the agreement made between the Nova Scotia Department of Agriculture and the Dominion Department of Agriculture in regard to the purposes for which this money was to be spent. The original agreement was slightly amended and the table represents the amended figures.

1.	College Maintenance	$20,000.00
2.	Interest and Sinking Fund on Science Building	5,500.00
3.	Agricultural Education in Rural Schools	9,000.00
4.	Entomological and Horticultural Investigation	7,000.00
5.	Educational Work in Dairying	3,000.00
6.	Educational Work in Poultry	1,500.00
7.	Women's Institutes	3,000.00
8.	Short Courses	3,000.00
9.	Field Demonstration Work	9,000.00
10.	Contingencies	145.45
		$61,144.45

The Federal Appropriation for the Aid of Agriculture in the Province was voted at a most opportune time. The Provincial Department of Agriculture was carrying on an ambitious campaign and had just reached the stage where the great essential to bringing the work to a successful issue was money. The Local Government finances were strained to their utmost and the sources of revenue did not permit much bigger appropriations. The Federal appropriation provided the one thing needful and with its aid the work of the Agricultural Department has made marked progress in the past two years. Before further detailing the nature of the expenditure, we are bound to say that we think The Honorable The Minister of Agriculture at Ottawa was wise in his determination to confine the expenditure of this money to educational purposes. While it is true that expenditures for this purpose are not always as acceptable to the public as appropriations for tangible purposes, there is no doubt that the ultimate outcome will be in the best interests of the Province. Personally I must state that up to the present time it has been a real pleasure to carry out the provisions of this Act with a view to making expenditures that will lead to the ultimate upbuilding of agriculture in the Province.

The following is a brief detail of the expenditure under each head.:—

1. *College Maintenance.*

The Federal appropriation made it possible to develop the various departments at the College without any increase in the Provincial Government appropriation. The largest addition has been the building up of a strong Horticultural Department, which, prior to the Dominion appropriation, was inadequately supported, A new Horticultural Building has been constructed, the staff has been added to and valuable experimental work on an extensive scale has been commenced with various kinds of fruit trees and vegetables of all sorts. The Professor of Agriculture, who is also Farm Superintendent, has secured the services of an Assistant and being in this way freed from many details of his work, has been able to give more time to matters of Provincial Importance. The Professor of Biology has had constructed a laboratory capable of accomodating 95 students at one time and furnished with equipment so as to be equal to at least any laboratory in Eastern Canada. The Professor of Farm Drainage, who also acts as instructor in Field Crops, has secured an assistant and has been able to accomplish much more work. The Professor of Chemistry, who formerly devoted over half his time to Normal College classes, is now devoting all his time to the Agricultural College and, as will be seen from his report, has already done some valuable investigation work. The Poultry Superintendent has secured an assistant to look after the poultry plant at Truro and so is devoting the major part of his time to the development of the poultry interests throughout the Province.

2. Up to the present time, Chemistry has been taught in the laboratories of the Normal College. The space available and the number of hours at which this space could be secured were limited and the students were not receiving as much instruction as they should receive in the fundamental science of Chemistry. Neither was there opportunity for carrying on investigation work. The new Science Building will house the Chemistry Department. It will also contain laboratories for the Provincial Entomologist and the Provincial Plant Pathologist when he is appointed. In addition a whole floor, 120′ x 50′ will be devoted to the beginnings of Domestic Science work for women. Altogether this building which when completed, will cost nearly $100,000, will add enormously to the effectiveness of the Agricultural College.

3. A detailed report of what is being done to promote agricultural education in rural schools will be found in the report of the Director, L. A. DeWolfe, which appears in the Annual report of the Superintendent of Education of Nova Scotia. This work in the schools is fundamental. It cannot yield very tangible results for a few years but if we read the history of other countries aright, is bound to produce great results in the next generation.

4. The Provincial Entomologist and Plant Pathologist has a great work to perform for the farmers and fruit growers of Nova Scotia. He is endeavoring to shield the farmers and fruit growers from the losses which insect and fungus pests will inflict if they once become established. Half of the Provincial Entomologists salary, all the salary of his assistant and 50%of the wages and salaries of his field men are being paid out of this fund. The result is that such pests as the Brown Tail Moth have been so held in check that, were it not for newspaper reports, our people would scarcely know its presence. The San Jose Scale has been practically suppressed and our potato shippers were enabled this last fall to ship over 15,000 barrels of potatoes to Bermuda which would otherwise have had to remain in the Province, Besides all this, investigation work is being carried on the results of which will be more apparent in future years.

5. No one division of the Department has produced bigger results in the past few years than the Dairy Division. The Federal appropriation has materially assisted, for from it has been paid part of the salary and travelling expenses of the Superintendent of Dairying together with all the salary and travelling expenses of the Assistant. Educational meetings have also been held and as is now well known, an outstanding success has been achieved.

6. In the report of the Poultry Superintendent, will be found a reference to the construction of demonstration poultry buildings in various counties of the Province, to the forming of Egg Circles, and to a general educational propaganda, the funds for which have been to a considerable extent secured from this Dominion appropriation.

7. The inauguration and carrying on of Women's Institute work has dated from the granting of the Dominion appropriation. The total cost of the work, including the salary of the Superintendent, is paid out of this fund.

8. In 1914 Short Courses in Agriculture were conducted for the first time in the history of the Department at Yarmouth, Bridgewater, Shubenacadie and Musquodoboit and an Apple Packing School at Kentville. All these courses were immensely successful the average attendance being in the neighborhood of 125. Buildings suitable for the purpose were either constructed or remodelled and the larger part of the money necessary was supplied out of the fund. Antigonish has been added this year to the counties in which a course will be held and gradually the work will be extended until all the counties are included.

9. The Field Demonstration work is gradually taking form. This is the third year in which it has been carried on in Cape Breton and it will pay anyone who is interested to read the report of H. S. Cunningham, to be found on subsequent pages of this report. In addition to the work for the improvement of Field Crops, a valuable campaign has been begun in the renovation of old orchards in several counties of the Province. Details of this will be found in the report of the Provincial Horticulturist. Besides this the Drainage Superintendent has secured a power driven cement tile making machine with which he has given demonstrations and has done a good deal to promote under drainage in the Province. All this together with the work which has been commenced in the analysing of soils and the use of various commercial fertilizers to correct deficiencies, more especially ground lime stone which is discussed in the subsequent pages, representa a field of work that will yield a rich fruition in the agriculture of Eastern Canada.

The foregoing is intended to give those who are interested some idea of what has been done with the Federal appropriation for the aid of agriculture. It is sufficient to conclude by stating that this fund added to the Provincial Government appropriation has made it possible to develop a Department, which I believe is gradually accomplishing great things for agriculture in Nova Scotia. I believe the money has been well spent and can only conclude by stating that avenues of progressive work have, as a result of the work already done, been opened up which could profitably . . consume a much larger amount of the public funds of the country and would yield big returns on the investment.

CONCLUSION.

Never have I been so encouraged by the results which are now accruing from organized agriculture in Nova Scotia. At first movements were slow and, at times, one could not but feel discouraged. Things have changed and it now appears that Nova Scotia is gradually taking her proper place in the agricultural development of Canada. I now realize as never before the faith that was required on the part of yourself and the Government of Nova Scotia when the building of an Agricultural College and the development of an Agricultural Department was undertaken. I can only hope that the results, which are now being harvested, will prove at least a partial reward for the anxious thought of earlier years. I wish, therefore, to convey to yourself as head of the Department of Agriculture, the appreciation which every member of the Department feels for the support which we have received, especially during the days when we were struggling for recognition, and let me express the hope that, in years to come, the results of our work may lead to a manifold multiplication of the fruitage of agricultural endeavor in the Province of Nova Scotia. On behalf of the staff of the Department of Agriculture.,

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Secretary of Agriculture.

TENTH ANNUAL REPORT OF THE NOVA SCOTIA AGRICULTURAL COLLEGE AND FARM.

Sir —

I have the honor to submit the tenth Annual Report of the Nova Scotia Agricultural College and Farm, being for the year 1914. The Report is divided as follows:—

Part 1—Report of the Principal.

Part 2—Report of the Professor of Botany.

Part 3—Report of the Professor of Zoology and Provincial Entomologist.

Part 4—Report of the Professor of Horticulture.

Part 5—Report of the Professor of Agriculture and Farm Superintendent.

Part 6—Report of the Professor of Field Husbandry and Farm Drainage.

Part 7—Report of the Superintendent of Poultry.

Part 8—Report of the Superintendent of Dairying and Lecturer in Dairying.

Part 9—Report of the Professor of Chemistry.

Part 10—Report of the Superintendent of Women's Institutes.

PART 1—REPORT OF THE PRINCIPAL.

Practically all the members of the Agricultural College Staff are also Provincial officers and hence this College report includes details not only of work done in the College but also of work carried on in the Province. By combining their reports the respective heads of departments will prevent an unnecessary use of printer's ink.

The Regular Course.

The enrolment of the regular course for the term of 1914-15 is 84. Of this number 45 are from Nova Scotia, 25 from New Brunswick, 5 from Prince Edward Island, 1 from Ontario, 5 from Great Britain, 1 from Newfoundland and 2 from the United States. There are 33 seniors and 51 juniors. This enrolment is 18 less than for the preceding term but is considerably higher than was anticipated when war clouds and a general financial depression darkened the sky.

Graduates of 1913-14.

Of those students who attended the College during 1913-14, 40 were awarded the Associate Diploma of the College. They were.—

Gordon Collingwood, Halifax, N. S.
Walter R. Shaw St. Catherine's P. E. I.
James Bremner, Chatham, N. B.
Harold Laird, Kelvin Grove, P. E. I.
Rolland Huddart, New Glasgow N. S.
M. H. Coughlin, St. Anns, P. E. I.
James M. McIntosh, West River, N. S.
Philip Donat, Manchester, England.
Rudolph Schafheitlin, Canning, N. S.
Henry A. Butler, Kelligrews, Nfld.
Rundall M Lewis, Yarmouth, N. S.
Austin C. Taylor, Salisbury, N. B.
Thos. Murphy, Coolrus, Ireland
Jas. R. Dickson, Truro, N. S.
Leslie G. Saunders, London, England.
Walter E. Whitehead, Hadlow, England.
Everett Hogan, Hope River P. E. I.
Frank. L. Cairns, Freetown, P. E. I.
Norman Lawrence, Lr. Dumphries, N. B.
Harry B. Langille, Marshville, N. S.
Gordon Atkinson, West River, N. S.
Philip Sanford, Coldbrook, N. S.
Loran Forsythe, E. Margaretville, N. S.
Harlan Buckley, Halifax, N. S.
Arthur Illingsworth, Fredericton, N. B.
Carlyle Spicer, Spencer's Island N. S.
Frank A. Dobson, Dorchester N. B.
Reginald Sanford, Pereaux, N. S.
J. Herbert Grimmer, St. Andrews, N. B.
Russell McKenzie, Green Hill, N. S.
Wm. McCullough, Keswick Ridge, N. B.
J. Hugh Logan, Stanley, N. S.
Harold Brown, Pownall, P. E. I.
Harold Freeze, Penobsquis, N. B.
Arthur McCunn, River John, N. S.
Arthur Wood, Sheffield Mills, N. S.
Robt. W. Starr, Starr's Point, N. S.
Harold R. DesBarres, Guysboro, N. S.
Robt. Fillmore, Amherst, N. S.
Douglas Dickie, Onslow, N. S.

The Premier Murray Cup for the best judging of live stock, was won by Walter R. Shaw, St. Catherine's, P. E. I. and the Prince Edward Island Student Cup for the best judging of seeds was won by James Bremner, of Chatham, N. B. The Governor General's silver medal for the highest standing in the senior year was awarded to Gordon Collingwood, Halifax, N. S.

The Short Course.

The Short Course held during the first two weeks of January 1914 was attended by 351 students, the largest enrolment in the history of the College.

At the date of writing, Jan 23rd, 1915, the Short Course for 1915 has been completed. The total enrolled attendance at this course was 286, of which number 235 attended the Men's Short Course and 51 the Ladies' Short Course. In previous years, owing to no Short Courses being held in Prince Edward Island or New Brunswick, the numbers in attendance at Truro were largely increased by an influx of students from these Provinces. However, in 1915, New Brunswick and Prince Edward Island both provided Short Courses for their own students so that the enrolment at Truro came almost exclusively from Nova Scotia. Moreover, the number so enrolled was the largest number that ever attended the institution from the Province of Nova Scotia Besides the regular attendance, there were a large number of casual students, the attendance on some days being in the vicinity of 500. This number was further augmented during the second week of the Course by delegates to the Maritime Stock Breeders' Association, the Nova Scotia Dairymen's Association, the Nova Scotia Veterinarians' Association, the Nova Scotia Poultry Association, and the Women's Institutes Convention. When all these bodies, together with their friends were assembled at a Public gathering in the College Assembly Hall on Tuesday night, Jan. 12, to hear addresses from the Hon. Mr. Murray, Premier of the Province and from the Mayor and other officials from the Town of Truro, the total number was considerably over 900, —perhaps one of the largest audiences ever assembled in the interests of agriculture in the history of Nova Scotia.

During the year, the Short Course held at Truro was supplemented by a series of three day Short Courses, held at Yarmouth, Bridgewater, Shubenacadie and Musquodoboit, a reference of which will be found in my report as Secretary for Agriculture. The average attendance at these courses was about 125.

The Rural Science School.

The Rural Science School, conducted jointly by the Agricultural and Normal Colleges, held its sessions during July and August, 1914. 130 teachers attended this school, which is conducted for the purpose of better fitting the teachers of the Province for teaching nature study, elementary agriculture and other sciences. A full report of this Rural Science School will be found in the Annual Report of the Superintendent of Education of Nova Scotia.

The Faculty.

One member of the Faculty, Dr. J. Standish, V. S. was removed by death during the year. Always a favorite with the students, loyal to the College, a faithful worker and a friend to every farmer in the Province, Dr. Standish has been greatly missed. He has been succeeded by Dr. J. A. Sinclair, V. S., of Cannington, Ont., who is well carrying on the traditions of the chair.

L. C. Harlow, B. Sc., who up to the present year was Professor of Chemistry at the Normal College and taught Agricultural Students during his spare hours, has been transferred to the Agricultural College. In addition to having more time for teaching, he is also carrying on investigation work, a description of which will be found in his report in the subsequent pages of this report.

Other additions to the College faculty are C. A. Good, B. S. A., who has assumed the position of Assistant in the Zoological and Entomological Department, and P. L. Sanford, a graduate of the Nova Scotia College, who has been acting as Assistant to Mr. J. M. Trueman, in the Agricultural Department.

In other respects the same personnel of instructors have conducted the work at the College as in 1913-14.

Improvements of the Year.

In each of the detailed reports which follow, the reader will find an outline of the work conducted in the various Departments and, in comparison with the previous year, will observe marked progress. The outstanding feature has been the addition of a Science Building, constructed from funds supplied by capitalizing a part of the Federal Grant for the aid of Agriculture in the Province. This building when completed will be the finest on the College premises.

It is 120 x 50 ft. and consists of a basement and two stories. The ceilings have been made sufficiently high to provide class rooms in the basement so that the building is really as commodious as a three storey building. The basement floor contains two large chemical laboratories together with dark rooms for photographic purposes, incubator rooms as well as the necessary heating apparatus. The first floor consists of an Entomological laboratory and offices, a Plant Pathology laboratory and office, a private Chemical Laboratory and one large class room. The second floor contains laboratories, kitchens, etc., suitable for Domestic Science work and also an Assembly hall with a capacity for an audience of 500. This floor will be devoted exclusively to classes for ladies and for Women's Institute Conventions and will form the centre for the work which is now being conducted for the improvement of rural conditions by ladies of the Province.

The opportunity for work which this new building will afford is being eagerly looked forward to by the members of the College staff. That the results in quickened effort and improved work may justify the expenditure is the hope of everyone interested in the agricultural development of Nova Scotia. As for myself, I have no doubt that the hope will be fully realized and that this new building will give a marked impetus to the work which is being carried on at the College.

Improvements Needed.

It is not in the nature of man to be satisfied. So, in order to make this a human document, I wish, before concluding to state some of the deficiencies of the College in the hope that public funds may soon be forthcoming to provide the means of developing those Departments which are necessary to the full rounding out of the institution.

The most urgent need at the Agricultural College is a strongly developed Field Crop Experimental Department, similar to the corresponding departments at the Ontario Agricultural College, Guelph and at Macdonald College, Quebec. At the present time any work which would come under the head of this Department is being directed by the Farm Superintendent, but his already onerous duties render it impossible for him to give the attention necessary to such work. Moreover, the man who is in charge of this division would also be expected to direct crop improvement work and field experiments throughout the whole Province. All this demands the undivided attention of a Field Crop Expert who in addition to carrying on experimental work at the

College, including the teaching of the students, would further develop the campaign which is now being carried on for improvement in varieties of crops, methods of seed selection and experimental work along these lines in every part of the Province.

A considerable part of this work is now being done at the Dominion Experimental Farm, Nappan, and one hesitates to ask for an appropriation for work which in a measure at least will overlap that which is being carried on at this station. This matter I discussed in my report of 1912, since writing which my views have not changed and I can therefore only restate my idea that the work now being carried on at the Dominion Experimental Farm, Nappan, should be more closely affiliated with the corresponding work which is being developed at Truro with a view to the mutual strengthening of these divisions of both the Provincial and Federal Departments of Agriculture. I need only point out that at the present time a similar policy to that which I have recommended is adopted by the Seeds Division of the Department of Agriculture, Ottawa, and the Department of Agriculture of Nova Scotia. That the cooperation has proved successful is evident to anyone who will take the pains to study the development of Field Crops Competitions, Seed Fairs and other measures, which have been promoted by the mutual co-operation of these Departments. Lest in this digression the points of these paragraphs may have become overlooked, let me again state that we need a Field Crop Expert and a Field Crops Department at Truro.

In several previous reports I have presented the needs of a dormitory to house the students. This need still exists but knowing the large demands which are being made on the public funds of the Province, I hesitate to urge the matter until a more opportune time.

Anyone who reads the subsequent reports will ascertain that the heads of the various Departments of the College and their assistants are rapidly developing their work which leads me to conclude this part of my report by stating that there is great need at the College for a general development of the Departments already organized, all of which are being conducted with a view to improving farming conditions in the Province. This means larger appropriations and it is inevitable that, if the College continues to grow, as it should, even if no further departments are created, increasing demands will have to be made for maintenance of the departments already in existence.

Conclusion.

Ten years have now elapsed since the College was formally opened on Feb. 5, 1905. That progress has been made and results achieved is, I think, generally conceded. The person who doubts this view need only read the subsequent pages of this report or the articles which from time to time appear in the press of the country or listen to the statements of men whose business gives them an opportunity to observe. Ten years ago, 17 students were enrolled in the regular course and 68 in the Short Course. Now the number has increased to over 100 in the regular course and to over 300 in the Short Courses. Besides, additional Short Courses are now being carried on in various parts of the Province. As for results, one need only call attention to the dairy statistics to the improvement in live stock, field crops and almost everything in connection with farm life in the Province. True, the results are meagre in comparison with the possibilities. Nevertheless advance is being made and the movement is gaining force. It takes at least a generation to accomplish very much and I think it is reasonable to suppose that, when so much improvement is evidenced in one decade, we may reasonably look to tremendous development in the decades to come.

I cannot too strongly, in concluding this report, pay tribute to the members of the College staff, everyone of whom has done his duty. With these I include Principal Soloan and his colleagues of the Normal College staff and also the Principal of the Truro Manual Training School. All join in stating our appreciation of the support which we have always received from yourself as Premier and from the members of the Government and Legislature of the Province of Nova Scotia, in return for which we can only hope that the growth of the College, its increasing influence and the tangible results which have followed its work may prove a reasonable reward to the citizens of the Province and the Government which administers its public affairs whose funds and support are responsible for the College and the work which it is doing.

I have the honor to be, Sir,

Your obedient servant,

M. CUMMING,

Principal College of Agriculture.

PART 2—REPORT OF THE PROFESSOR OF BOTANY.

Dec. 1*st.*, 1914.

Principal M. Cumming, Esq.,

Sir:—I have the honor to submit my annual report.

With the Junior class my time was nearly equally divided between the instruction in Geology and Botany. These courses are elementary and are so arranged that they correllate with the other first year subjects as well as form a groundwork for the second year.

In Geology, the student studies the geological formation around Truro then besides the textbook, the geological structure and history of each formation in the Province is discussed.

In Botany, the student first studies a few typical forms and becomes acquainted with the more common botanical terms, then the important agricultural and horticultural forms are studied, as grasses, cereals, small and large fruits, etc. and at the same time the evident botanical relationships. Some elementary instruction is given on how plants grow, their relation to soil and air and their diseases.

With the Senior class a much more technical and advanced course is necessary. A course in microscopy is first given which is preparatory for their work both in Botany and Bacteriology. This is followed by a course covering the structure and physiology of plants and this in turn by one upon the important plant diseases.

In April at the close of the college course I began work with the Rural Science students. This continued till nearly the middle of August.

Instruction was given the Rural Science classes in Plant diseases and Entomology. The entomology is a major subject and requires two courses, an elementary and advanced course. Work with these students is carried on by correspondence during the remainder of the year.

Plant Diseases.

I have urged the importance of the appointment of a plant pathologist for the province who would be free to investigate and report upon outbreaks of plant diseases. The need of this is evident from the increased losses we are sustaining from these diseases.

The *powdery scab* of potatoes has been found in some localities but this was an apparently unfavorable season for it as an experimental plot I planted with diseased tubers only show traces of the disease. The American scab however grew very well under the same conditions. On farms where this disease occurs either the potato crop should be omitted for many years and the affected soil kept in other hoed crops and then grain or grass or potatoes should be grown only on land known to be free from this disease. As it is impossible to avoid the transportation of soil from an infected field the potatoes used for planting should be treated either with formalin solution, using one part of commercial Formalin (Approximately forty per cent) to three hundred parts of water, or one part of corrosive sublimate to twelve hundred and eighty parts of water, Soak the potatoes in the solution for two or three hours then dry and plant. Never plant scabby potatoes nor plant on affected soil. If the sound potatoes have been in contact with scabby potatoes they should be treated. But no treatment is known to control this disease.

Clubroot of Cabbage, Turnip, etc. This disease is still on the increase here. Most of the recent infections point to the seed as the source. The farmer should insist on seed guaranteed free from the disease and grown on land free also from it. The seed can be treated as potatoes for the scab with similar solutions but I am not sure how efficiently. Where possible I would recommend the substitution of a crop of Mangels.

Black Rot of Turnips, Cabbage, etc. This disease which I have discussed in previous reports is also very common and although a dry and unfavorable season for it, it did considerable damage. It is caused by bacteria which enter the plant through the leaves and cause the leaf to die and often decay and the root or head to decay. The black veins in the turnip leaf and the black rot of the cabbage head are the most common symptoms. The seed of these crops should be treated with the solution as given above.

Bunt of Wheat is also spreading from the original infected area. This is due to using infected seed.. This should never be done even on infected farms. It is also due to transportation of the disease from farm to farm by the threshing machine. Grain threshed by a machine which has previously been on an infested farm should be treated before using for seed even through this disease did not occur on that farm as the grain is liable to infection from the thresher.

Respectfully submitted,

H. W. SMITH.

PART 3—REPORT OF THE PROFESSOR OF ZOOLOGY AND PROVINCIAL ENTOMOLOGIST.

M. Cumming, Esq., Secretary for Agriculture.

Sir —I have the honor to submit the third report of the Department of Zoology and Entomology of the Nova Scotia Agricultural College, and my second report as Provincial Entomologist. The work of the past year will be discussed under the following heads:—(1) General; (2) Brown-Tail Moth report; (3) San Jose Scale Report; (4) Fire Blight Report; (5) Potato Inspection Report; (6) Cost of Inspection Service; (7) Experimental.

General.

During the past year considerable time was consumed in teaching the regular college classes and in taking part in the various short courses and meetings held throughout the country. A number of additions were made to our demonstration sets of economic insects for educational purposes. Large stores of material for class work were also collected.

Our correspondence dealing with inspection work and the treatment of injurious insects has assumed large proportions. Throughout the year an effort has been made to keep the public in touch with our work by means of timely contribution to the local press.

This spring a small laboratory and insectory was erected on the grounds of the experimental farm at Kentville, permission to use this site having been secured from Mr. J. H. Grisdale, Director of Dominion Experimental Farms, and Prof. W. S. Blair of the Kentville Station. The services of Mr. C. A. Good, B. S. A., graduate of the Ontario Agricultural College, was secured to take charge of the work at Kentville. Mr. Good reported for duty on June 1st. and under my direction, he is doing investigation work in fruit insects, especially the apple maggot. His researches will be of great value as they are completed. In order to further as much as possible this important phase of our work, he has been freed from any connection with the inspection service carried out by this department.

A feature of the past season was the outbreak of the Army Worm (Heliophila unipuncta). Nova Scotia was not exempt from their attacks our records showing the insect present in practically every section of the Province. The distribution was complete and the loss in some localities quite heavy.

Lunenburg County was first visited, and serious injury to corn and grain noticed in the vicinity of New Germany and other sections. In some cases a large part of the crop was destroyed. Portions of Yarmouth and Digby counties were visited by Mr. Good, who reported the loss of the oat crop to be between 50 and 60%. The grain, of 17 out of the 28 places visited was practically a total loss; in the remaining eleven the damage was of varying severity. In most cases the caterpillar seemed to prefer oats to barley. Corn was a favorite food and suffered severely when the insect was numerous. Timothy and couch grass were eaten freely, while clover and even turnip tops were sometimes devoured. Many fields were cut green to escape the ravages of this pest and very frequently the damage continued after the grain was cut.

In addition to the above, records were taken from Annapolis, Kings, Hants, Colchester, Cumberland, Pictou, Antigonish, Halifax, Guysborough and Cape Breton Counties. While in most cases the injury was slight, some severe outbreaks were located. In quite a number of cases we were able to protect non-infested fields by the use of trenches and furrows. Few farmers could be induced to use poisoned bran, so that this method was not given a fair trial. In all, hundreds of letters were answered in regard to this pest, though unfortunately in many cases the damage was already done when application for help was made.

The Stalk Borer (Hydroecia micacea). This insect is of European origin, and only a few records of its work have been made in North America. In Europe it is known as the Potato Stalk Borer and in the town of Yarmouth this summer, many potato plants growing in gardens were destroyed by this insect boring in the stalks. The rhubarb plantation at the college was also visited by a severe infestation of the same insect, so that this years' crop was practically destroyed. This is particularly interesting in view of the fact that, on the whole, rhubarb is remarkably free from insect pests.

The False Tarnished Plant Bug, (*Lygus invitus*).

All through the fruit district we located orchards suffering from severe attacks of this insect both in apples and pears. In most cases the grower reported that similar damage had occurred in his orchard for a number of years, but that the cause had not been suspected. Fruit attacked by this insect was so badly disfigured as to be rendered unmarketable and if attacked when small the fruit dropped. In view of the serious loss resulting from this work in many cases, it has been decided to undertake a complete investigation with a view of discovering the most suitable means for the control of this insect.

Spruce Gall Louse (*Chermes similis*).

This insect has in previous seasons caused disfigurement and damage to the spruce hedges about the college grounds. It was found that they could be fairly satisfactorily controlled by either Lime-sulphur or Black Leaf 40, alone, or combined with flour paste.

These are a few features of the season's work. Records were taken of scores of other insects, which we hope will be published when our observations are completed. Mention will be made of others under other headings.

My laboratory assistant Mr. C. B. Gooderham left on Oct. 1st to continue his studies at MacDonald College. During all the time he was in the employ of this department he rendered very faithful service.

Brown Tail Moth Report.

The following is the report of the Brown-tail Moth inspection for the season of 1913-1914.

According to agreement, the work of controlling the Brown-tail Moth in Nova Scotia is under the direction of the Dominion Entomologist, Dr. C. Gordon Hewitt, while Mr. George Sanders, Field Officer of the Dominion Entomologist Branch has charge of the men in the field. The province co-operates by placing at the disposal of the Dominion authorities an equal number of men to that employed by the Dominion Department of Agriculture.

The work began on November 1st, the following men being engaged by the province: Messrs. H. G. Payne, A. Kelsall, A. E. McMahon and H. P. Munro. The inspectors employed by the Dominion were Messrs. S. H. Payne, F. C. Gilliatt, A. E. Hunt and V. Chute. Owing to the large increase in the number of nests over the previous season, on February 14th two new inspectors were employed, L. FitzRandolph for the province and A. Whitman for the Dominion.

On April 8th Mr. Fitzrandolph left the Provincial staff and on April 11th Mr. Hunt resigned from the Dominion force. On April 30th all the men were taken off but Messrs. Gilliatt and Baker who remained at work until May 16th.

On April 11th Mr. A. Kelsall resigned to accept a position with Prof. Blair of the Experimental Farm, Kentville and was replaced by Mr. L. Baker.

The first two months of the work were spent in a hurried inspection of the most heavily infested territory in order to anticipate the winter drop which Mr. Sanders believes to be considerable. During the latter part of the winter, numbers of nests were found hanging to the trees by a thread while bits of web attached to twigs from which the nests had dropped were not infrequently found. The territory covered in this first inspection consisted of the Annapolis Valley as far east as Kingston and Digby County as far west as Weymouth.

The second inspection was more thorough and covered the Counties of Shelburne, Yarmouth, Digby, Annapolis, Kings, and a portion of Hants and Cumberland. From March 15th to the end of the season a portion of the force proceeded for the third time over the heavily infested territory gathering up the nests missed in the earlier inspections.

The total number of nests taken during the season was 24,156. The following tables show where these nests were obtained, former years since definite records have been kept being given for comparison:—

Yarmouth County.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Amirault Hill	....	....	....	.....	2
Arcadia	....	....	....	.....	63
Argyle	....	....	....	.....	7
Bellneck Road	....	....	....	.....	5
Bellville	....	....	....	.....	2
Black Point	....	....	....	.....	2
Bloomfield	....	1	....	.....	......
Brazil Lake	....	....	....	.....	15
Brenton	....	....	....	.....	39
Brooklyn	....	....	1	.....	51
Carleton	....	5	....	.....	9
Centre Argyle	....	....	....	.....	1
Chebogue	....	....	....	.....	69
Chegoggin	....	....	1	.....	44
Clelands Corner	....	....	1	.....	......
Comeau's Hill	....	....	....	.....	3
Deerfield	....	1	....	1	27
D'Entromonts	....	....	....	.....	11
East Chebogue	....	....	....	.....	7
East Kemptville	....	....	....	.....	3

Yarmouth County:–*Continued.*

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
East Pubnico	....	....	....	.....	7
Eel Brook	....	....	....	.....	3
Egypt	....	....	....	.....	6
Forest Glen	....	1	....	.....	6
Gardner's Mills	....	....	....	.....	5
Greenfield	....	....	....	.....	13
Gavelton	....	....	....	.....	4
Glenwood	....	....	....	.....	6
Hebron	....	1	2	.....	48
Hillview	....	....	....	.....	8
Kelley's Cove	....	....	....	.....	5
Kemptville	....	....	....	.....	5
Lake Annis	....	....	....	.....	5
Lake George	....	1	....	.....	21
Lakeside	....	....	....	.....	21
Lower East Pubnico	....	....	....	.....	1
Lower Eel Brook	....	....	....	.....	5
Lower West Pubnico	....	....	....	.....	4
Middle West Pubnico	....	....	....	.....	1
Milton	....	....	..	.....	40
North Kemptville	....	....	....	.....	7
Norwood	....	....	....	.....	7
Ohio	....	1	1	.....	43
Overton	....	....	....	.....	6
Pleasant Valley	....	....	....	.....	12
Pleasant Corner	....	....	....	.....	3
Pleasant Lake	....	....	....	1	16
Port Maitland	....	....	....	.....	7
Pubnico	....	....	....	.....	1
Plymouth	....	....	....	.....	8
Plympton	....	2	....	.....	......
Quinanx	....	....	....	.....	5
Raynerville	....	....	....	.....	23
Reynard Brook	....	....	....	.....	12
Robert Island	....	....	....	.....	1
Rockville	....	....	....	.....	16
Sand Beach	....	....	....	.....	13
Sanford	....	....	....	.....	10
Short Beach	....	....	....	.....	2
South Bellville	....	....	....	.....	2
South Canaan	....	....	....	.....	10
South Ohio	....	....	....	.....	19
Springhaven	....	....	....	.....	7

Yarmoutn County;—*Continued.*

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Summerville	....	....	....	....	20
Trenton	....	....	....	....	30
Tusket	....	....	....	1	9
Tusket Falls	....	....	....	....	4
Tusket Wedge	....	....	....	....	15
Wedgeport	....	....	....	....	4
Wellington	....	....	....	....	42
West Deerfield	....	....	....	....	29
West Pubnico	....	....	....	....	2
Yarmouth	....	....	3	3	48
		13	9	3	1007

Digby County.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Acacia Valley	....	1	3	....	7
Acaciaville	....	2	....	....	3
Ashmore	....	1	....	....	8
Barton	....	18	34	14	35
Bear Cove	....	....	....	2	3
Bear River	390	613	2317	4121	5783
Beaver River	....	1	....	....	9
Belliveau Cove	....	....	....	....	4
Blackadars	....	....	....	1	14
Bloomfield	....	1	....	....	6
Brighton	....	2	12	1	22
Cedar Lake	....	....	....	....	18
Centreville	....	....	....	....	4
Church Point	....	1	1	....	4
Concession	....	1	1	....	15
Corberrie	....	....	....	....	3
Culloden	....	....	....	....	3
Danvers	....	17	....	....	....
Digby	....	3	....	5	28
Doucetteville	....	....	....	....	5
Easton	....	....	....	....	1
Fort Point	....	2	....	....	....
Frasertown	....	....	....	....	1
Gilbert's Cove	....	2	....	2	7

Digby County:—*Continued.*

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Grosses Coques	....	....	....	.....	2
Gulliver's Hole	....	....	....	.....	5
Hassett	....	1	3	.....	1
Havelock	....	....	....	.....	3
Hectanooga	....	....	....	.....	21
Hill Grove	....	....	....	.....	10
Hilltown	....	16	2	2	3
Joggins	....	....	....	.....	5
Jordantown	....	....	41	2	8
Lakeside	....	....	....	.....	1
Lansdowne	....	....	....	.....	17
Little Brook	....	....	....	.....	5
Little River	....	....	....	.....	9
Lower Meteghan	....	1	....	.....	......
Lower Saulnierville	....	2	....	.....	......
Mavilette	....	....	....	.....	1
Marshalltown	....	1	....	1	20
Maxwellton	....	....	....	.....	5
Melanson Settlement	....	6	4	.....	9
Meteghan	....	1	3	1	74
Meteghan River	....	3	8	1	63
Meteghan Station	....	....	....	.....	14
Mistake Settlement	....	....	....	.....	1
Mink Cove	....	....	....	.....	2
Morgantown	....	....	....	.....	4
Mount Pleasant	....	....	....	.....	3
Moody's Corner	....	....	....	.....	4
New Edinburgh	....	....	1	1	27
North Range	....	....	....	.....	22
Plympton	....	....	2	.....	16
Plympton Station	....	....	....	.....	6
Pleasant Valley	....	....	4	.....	......
Point Prim	....	....	....	2	11
Riverdale	....	3	....	.....	......
Rossway	....	....	....	.....	6
Roxville	....	....	....	.....	7
Saulnierville	....	....	3	1	19
Salmon River	....	....	....	.....	10
Sandy Cove	....	....	....	.....	8
Seigone	....	....	....	.....	2
Sea Brook	....	....	....	.....	2
Seawall	....	....	....	.....	1
Sissibou Falls	....	1	....	.....	7

Digby County:—*Continued.*

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Sissibou River	....	....	15	.....	......
Sissibou Station	....	....	....	.....	2
Smith's Cove	24	18	238	429	581
Southville	....	643	69	3	1
South Range	....	29	15	.....	11
Springdale	....	....	....	.....	37
St. Bernard	....	....	....	.....	10
St. Mary's	....	....	....	.....	2
St. Joseph	....	....	....	.....	3
Tiddville	....	....	....	.....	1
Waterford	....	....	....	.....	5
Weaver's Settlement	....	....	4	.....	......
West Belliveau	....	....	....	.....	4
West Port	....	....	....	.....	4
Weymouth	....	1511	190	475	621
Weymouth Mills	....	....	325	.....	......
Woodstock	....	1	1	.....	......
	414	2903	3325	5064	7699

Annapolis County.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Annapolis	....	1	178	485	2148
Beaconsfield	....	....	....	1	2
Belle Isle	....	....	1	19	43
Birchtown	....	....	....	.....	1
Brickton	....	3	19	51	30
Bridgetown	344	619	1368	1235	2618
Carleton Corner	....	234	....	.....	......
Centrelea	....	....	....	2	109
Clarence	....	....	....	25	167
Clementsport	5	....	8	16	81
Clementsvale	....	1	1	.....	5
Dalhousie	....	....	....	.....	1
Deep Brook	417	118	632	844	1451
Delap's Cove	....	....	....	.....	6
Delusion	....	....	....	.....	1
Gate's Mountain	....	....	....	.....	10

Annapolis County:—*Continued.*

	1909-'10	1915-'11	1911-'12	1912-'13	1913-'14
Granville Centre........	....	1	....	1	20
Granville Ferry.........	....	....	1	.....	14
Granville Lower........	....	1	....	.....	......
Greenland.............	....	....	....	.....	10
Greywood.............	....	....	....	.....	5
Guinea...............	....	....	....	.....	9
Hampton..............	....	1	....	.....	45
Hessian Line..........	....	....	....	3	77
Hillsburn.............	....	....	....	.....	10
Inglewood............	....	....	....	.....	6
Inglisville............	....	....	....	.....	4
Karsdale.............	....	....	....	.....	2
Lake La Rose..........	....	....	1	1	1
Lake Brook...........	....	....	....	.....	2
Lawrencetown.........	14	8	257	699	1215
Lequille.............	1	108	133	21	......
Margaretsville.........	....	....	....	.....	6
Meadowvale..........	....	....	....	.....	4
Melvin Square.........	....	....	2	24	39
Middleton............	40	20	106	79	234
Milford..............	....	....	....	.....	1
Mochelle.............	....	7	169	334	1409
Mount Hanley.........	....	....	....	.....	8
Mount Rose...........	....	....	....	.....	4
Nictaux..............	235	18	248	185	467
North Williamston......	....	....	....	1	......
Outram Road..........	....	....	....	.....	5
Paradise..............	8	11	221	514	800
Parker's Cove.........	....	....	....	.....	3
Parker's Mount........	....	....	....	.....	6
Perotte Settlement......	....	....	....	.....	1
Phinney Cove.........	....	....	....	.....	1
Port George...........	....	....	....	.....	4
Port Wade............	....	....	....	.....	2
Port Lorne............	....	....	....	.....	5
Prince Dale...........	....	....	....	.....	1
Power Lot............	....	....	1	.....	......
Round Hill............	3	268	564	827	2690
South Farmington......	....	....	6	58	55
South Wilmot.........	....	....	2	.....	......
Spa Springs...........	....	....	253	162	87
St. Croix..............	....	....	....	.....	3
Stoney Beach..........	....	....	....	.....	5

Annapolis County:—*Continued.*

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Thorne's Cove	....	....	....	.....	1
Torbrook	....	....	....	.....	5
Tupperville	....	1	19	15	193
Upper Clements	....	2	....	7	70
Upper Granville	....	....	2	2	2
Victoria Beach	....	....	....	.....	1
Victoria Vale	....	....	1	.....	17
Victory	....	....	....	.....	1
Virginia	....	....	....	.....	1
Waldeck	....	....	7	16	......
Waldeck Line	....	....	....	.....	24
Waldeck West	2	....	....	.....	......
West Paradise	....	12	....	.....	......
West Springhill	....	....	....	.....	1
Williamston	....	....	139	84	202
Wilmot	....	10	5	170	121
	1070	1444	4334	5881	14572

Kings County.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Auburn	....	....	17	37	105
Aylesford	....	....	....	28	17
Berwick	....	....	....	2	8
Brooklyn Street	....	....	....	.....	1
Brooklyn	....	....	1	.....	......
Cambridge	....	....	3	.....	1
Canard	....	....	....	.....	1
Claremount	....	....	....	.....	1
Cold Brook	....	....	....	.....	1
Greenwood	....	....	....	.....	16
Kentville	....	....	....	.....	2
Kingston	....	....	13	3	......
Kingston Station	....	....	4	33	620
Kingston Village	....	....	....	.....	31
Lakeville	....	....	....	.....	2
Lawson Corner	....	....	....	.....	1
Millville	....	....	....	.....	4

Kings County:—*Continued.*

	1909-'10	1910-'11	1911-'12	1911-'13	1913-'14
Morden	....	....	....	.....	2
North Kingston	....	2	....	.....	17
North Waterville	....	....	....	.....	1
Pereau	....	....	....	.....	1
Sheffield Mills	....	....	....	1	......
South Waterville	....	....	1	.....	......
Tremont	....	....	....	.....	2
Somerset	....	....	....	.....	3
Upper Dyke Village	....	....	....	.....	1
Victoria Bridge	....	....	....	.....	1
Weston	....	....	....	.....	4
Woodville	....	....	....	1	2
		2	39	105	845

Hants County.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Falmouth	....	....	....	1	......
Minasville	....	....	....	.....	1
				1	1

Cumberland County

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Diligent River	....	....	....	.....	1
New Prospect	....	....	....	.....	1
					2

Shelburne County.

	1909-'10	1910-'11	1911-'12	1912-'13	1013-'14
Birchtown.............	....	....	....	.....	2
Barrington Passage......	....	....	....	.....	4
Brass Hill.............	....	....	....	.....	1
Big Port L'Herbert......	....	....	....	.....	1
Cape Sable Island.......	....	....	....	.....	1
Churchover............	....	....	....	.....	2
Gunning Cove..........	....	....	....	.....	1
Jordan Falls...........	....	....	....	.....	4
Lockeport.............	....	....	....	.....	1
Lockeport Station.......	....	....	....	.....	2
Oak Park..............	....	....	....	.....	1
Rockland..............	....	....	....	.....	1
Sand Point............	....	....	....	.....	1
Shelburne.............	....	....	....	.....	6
Upper Ohio............	....	....	....	.....	1
Upper Woods Harbor....	....	....	....	.....	1
Villagedale............	....	....	....	.....	1
					30

Totals for Counties.

	1909-'10	1910-'11	1911-'12	1912-'13	1913-'14
Yarmouth...............	....	13	9	3	1007
Digby..................	414	2903	3325	5064	7699
Annapolis...............	1070	1444	4334	5881	14572
Kings..................	....	2	39	105	845
Hants..................	....	....	....	1	1
Cumberland.............	....	....	....	.....	2
Shelburne...............	....	....	....	.....	30
Locality unknown.........	12	....	....	.....	......
	1496	4362	7707	11054	24156

The following table shows the number of nests taken on the various host plants:—

Alder	1
Apple	20810
Bayberry	2
Beech	1
Birch	5
Elder	1
Elm	23
Maple	19
Miscellaneous	1
Mountain Ash	1
Pear	877
Plum	761
Poplar	1
Oak	141
Quince	4
Rose	16
Sweet Cherry	34
Thorn	1090
Wild Cherry	2
Wild Pear	364
Willow	1
Withe	1
Total	24,156.

A feature of the work was the great increase in the number of nests taken in Yarmouth County, an increase which Mr. Sanders attributes to the American flight. He bases his opinion on the following facts:—The infestation in Yarmouth County in 1912-13 was 3 nests widely scattered. Shelburne County and the Bay Shore of Annapolis was never infested before. The infestation in these places was very scattered, there never being more than one nest per tree in each locality. During the summer of 1913 an enormous flight of Brown-tail Moths invaded the west end of the province, from New England, covering all of Shelburne, Yarmouth and Digby Counties and the Bay Shore of Annapolis and Kings Counties.. This flight took place on July 19th and 20th, while the local flight took place some days later on July 25th, 26th and 27th. On July 19th in Yarmouth a strong north wind following a light westerly breeze blew the moths into the town in such clouds that the band had to cease playing in the open. On July 20th, the Schooner Valdane between the Lurcher and Digby Gut, sailed for twelve hours through a cloud of Brown-tail moths. The steamer Granville from Annapolis to St. John reported meeting a cloud of "white millers" in the Bay on July 19th. It must be pointed out, however, that the great mass of these moths were males, no gravid females having yet been found in the American flight.

Accepting Mr. Sanders figure of 1,538, as the number that can probably be attributed to the American flight, we have still a natural increase of 11,564—more than the total number taken the previous season. The greatest increases have been, as was the case last season, in Annapolis and Digby Counties. The reason for this is not far to seek. According to the records taken by our own inspectors only 14.5% of the total acreage in orchard in Digby County is ever sprayed at all. In Annapolis County only 56.75% was sprayed, the amount of spraying varying greatly in the different localities, generally decreasing from the east to the west. It may, therefore, be said that where least spraying is done, there the Brown-tails are most numerous. When it is remembered that out of a total of 24,156 of nests taken, 22,486 were removed from orchard trees, it is evident that if everyone sprayed their orchards the Brown-tail moth would soon be brought under control, if not exterminated. It is significant that Kings County, where 86% of the total acreage is sprayed, has never been seriously infested, though repeated infestations have taken place.

It is obvious, therefore, that something should be done to induce growers in the infested territory to spray their trees. An earnest effort should be made to obtain the co-operation of the people in the work of exterminating the Brown-tail Moth. At present, a great number of growers neither spray or make any efforts to remove the nests from the trees during the fall and winter months, preferring to wait for the inspectors to come and do the work. Under the present circumstances it does not seem probable that this pest will ever be exterminated or ever permanently reduced in numbers. A hopeful sign is the fact that considerably more spraying was done this season than last, though many orchards where large numbers of nests were taken have not been sprayed at all. Another fortunate feature is the large amount of winter-kill which took place during the past winter. This, however, cannot afford more than temporary relief, and a vigorous educational campaign should be immediately initiated, with the view of securing the co-operation of the farmers and inducing them to practice more and better spraying.

San Jose Scale Report.

This report may be divided into two parts; (1) Inspection of Nursery Stock at port of entry and (2) Field Inspection.

(1). Inspection at Port of Entry: According to the regulations passed under the provisions of the Destructive Insect Pest and Plant Disease Act, 1911, all nursery stock entering Nova Scotia from other provinces of Canada must be accompanied by a certificate from the provincial entomologist of that province to the effect that the stock is free from San Jose Scale and other injurious pests. Furthermore, all stock must be detained for inspection and fumigation at our ports of entry at Digby and Truro, and if found infected must be either returned to the shipper or destroyed to the extent deemed necessary by the inspector. Formerly stock passed by the Dominion authorities at their ports of entry were exempted from the provisions of the Act. As only fumigation is done at the Dominion stations, some dissatisfaction was caused among the shippers in our sister provinces. To remove any suggestion of discrimination, regulations were passed removing this exemption and requiring U. S. stock to be inspected likewise.

To carry on the work effectively we doubled the fumigation capacity of our house at Truro and in addition erected a shed where inspection could be done and cases of stock stored. Unfortunately the limited space at our command only enables us to handle one carload at a time, while frequently two or sometimes three carloads await our attention on the track. The spring fumigation season lasts from March 15th to May 15th, but 4-5 of the stock comes in during the last week. This naturally taxes our facilities to the utmost, though fortunately we have so far been able to get all shipments through without undue delay.

Our Digby station consists of one fumigation chamber only, of 1000 cu. ft. capacity and is situated inside the freight shed on Digby wharf. This location does not make for efficient work, the run of freight and passenger traffic frequently seriously interfering with the work. Furthermore the fact that the single chamber must be emptied and refilled before another charge can be given, causes vexatious delays. However, it appears to be the only place available and we have had to make the best of a rather difficult situation.

A total of some 45,000 fruit trees, besides a very large number of small fruits and ornamental stock passed through our hands and of this number considerably over 50% had to be rejected on account of San Jose Scale. Owing to a mistake on the part of the railway officials two carloads were allowed to proceed without inspection. Fortunately we were speedily made aware of the matter and succeeded in stopping a considerable number before delivery. Some, found infested with scale were destroyed and others were subsequently traced up in the field.

A gratifying feature of this work was the support accorded us by the Nova Scotia fruit growers. Though some of them were put to considerable inconvenience by our action, they all realized its necessity and stood loyally by the provisions of the Act, which they were instrumental in having passed.

Field Inspection.

Immediately after the nursery stock inspection was completed the field work began, with the following inspectors in charge of Mr. H. G. Payne:—F. C. Gilliatt; G. Collingwood; E. A. McMahon; L. G. Saunders; L. Baker; C. A. Crooker; W. E. Whitehead and V. Chute. The inspectors were instructed to consider themselves not only as San Jose Scale men, but also to hold themselves in readiness to give information in regard to orchard pests and their remedies, to send in reports on, and specimens of injurious insects encountered, and to take note of the conditions of the orchards visited from this standpoint. Forms were supplied for them for compiling such information, with the result that some significant facts have been brought out. The counties of Hants, Kings, Annapolis, Digby and Yarmouth, were visited together with parts of Colchester, Lunenburg and Queens.

On August 8th, L. Baker resigned from our force to volunteer for service in the war. On August 15th, F. C. Gilliatt was transferred to the work on Fire Blight. C. A. Crooker left the work on Sept. 1st., G. F. Collingwood and E. A. McMahon on Sept. 22nd., V. Chute was sent to assist Mr. Good at the apple maggot work and the remainder of the men went on the potato inspection until Nov. 1st.

The result of the past seasons' inspection is given in the accompanying table, other years being given for comparison.

Results of Season's 1912, 1913 and 1914 Inspection.

	1912	1913	1914
No. of trees of 1910 planting destroyed	7	0	0
" " 1911 " "	339	6	1
" " 1912 " "	377	45	2
" " 1913 " "	0	6	0
" " 1914 " "	0	0	0
Total number of trees destroyed	723	57	3

The foregoing table shows conclusively the effectiveness of our inspection at the port of entry, not a single infested tree having escaped us in 1914. It also shows that the San Jose Scale has been brought to the verge of extermination in this province and that by continued watchfulness we may keep it definitely under control. It furthermore, justifies our somewhat drastic inspection, which naturally has been subjected to rather severe criticism from those suffering from the same in points outside the province.

The following table also brings out facts which should be of considerable interest to our fruit growers:—

Total number of properties inspected	6,839.00
Total acreage (approximate) in orchards	32,532.00
No. of fruit growers who spray at least once (we did not request No. of sprayings).	2,535.00
No. of fruit growers who do not spray	4,304.00
Percentage that spray	37.1
Acreage of orchards sprayed	22,432.00
Acreage of orchards not sprayed	10,100.00
Percentage of orchard area sprayed	68.9

This table shows that while only 37% of our fruit growers spray, 68% of the total acreage is sprayed at least once. This indicates that on the whole it is the farmers owning small orchards who do the least spraying, while a large proportion of the larger orchardists have now been converted to this practice. It also brings out the need for further educational and demonstration work in favor of more and better spraying. It should be noted, however, in examining these figures that localities are included which cannot be regarded as fruit sections and consequently the general average of sprayed orchards is lowered.

To show the results of our inspection by counties, the following table has been compiled:—

COUNTIES	No. trees Inspected.	No. properties Inspected.	No. who Spray.	No. who do not Spray.	Percent who Spray.	Total Acreage	Acreage Sprayed	Acreage not Sprayed	Percent Sprayed
Colchester......	112	49	0	49	0%	37	0	37	0%
Kings..........	88924	2189	1622	567	74½%	17998½	15634¼	2364¼	87½%
Hants..........	15096	1298	159	1139	12¼%	3662	1178½	2484¼	32¼%
Annapolis.......	43090	1914	715	1199	37½%	8696½	5483½	3213	63⅛%
Lunenburg......	342	335	5	330	1⅓%	502	7½	494½	1⅓%
Digby..........	631	560	16	544	2¾%	772½	51	721½	6⅔%
Queens.........	198	119	14	105	11⅔%	225¾	65½	160¼	28¾%
Yarmouth......	1423	375	4	371	1 %	637½	12¼	625¼	1¾%

This table is interesting in showing the counties where most spraying is done. Kings County still holds the record as to the number of those who spray and the total acreage sprayed. A comparison of the figures compiled by our inspection last year shows that there has been an appreciable increase in the number of those who spray. This is borne out by the fact that over 100 new power spraying outfits were purchased in the fruit belt during the last season, so that not only do more people spray, but better work is being done. Though the effects of the European war and the consequent drop in prices of fruit, may affect this work injuriously in the immediate future, we hope to see this progress not only maintained but also continued in subsequent years.

In closing I wish to record my appreciation of the careful, painstaking work of our inspectors. Particular praise is due to Mr. H. G. Payne, whose effective work often under trying circumstances has been most helpful.

Fire Blight Inspection.

Early in June an outbreak of Fire Blight (Bacillus amylovorus) was located near Wolfville. While mostly present in the form known as "blossom blight" and not so virulent as found in some other provinces, the disease had, nevertheless, occasioned considerable loss. The orchard was a very old one and the variety most affected was the Non-pareil. The owner informed me that in the six or more years that this disease had been present in his orchard, he had received practically no crops from these trees.

Realizing the need for prompt action in order to determine the distribution of the disease and to instruct the growers in methods of combating it, I called our inspectors together and gave them the necessary information as to cause, symptoms and control of the disease. I then made a hurried trip through the chief fruit section with the object of locating further outbreaks. As a result, the disease was found to be established in several farms in the vicinity of Wolfville, Port Williams, Starr's Point and the Gaspereaux Valley. Later through Mr. George Sanders, I was able to locate further outbreaks in the neighborhood of Annapolis Royal and Tupperville.

It was decided that the most practical way to deal with this situation, was to have a careful man visit each farm where the disease was present and stay with the owner a sufficient length of time to instruct him in the treatment of the blight. The methods used to combat this trouble are so different to any of those with which the fruit grower is accustomed, that any other method would be unsatisfactory. Through the courtesy of Prof. W. S. Blair, we were enabled to obtain the services of Mr. A. Kelsall of his staff, who spent some two weeks in one of the worst orchards near Wolfville. He then transferred to apple maggot work and his place was taken by Mr. F. C. Gilliatt of our own force. On over 30 farms our inspector stayed from a few hours to two weeks, as the occasion demanded, working with the grower until a thorough understanding of the details of blight control was insured. As a result of our work it was possible to remove all traces of the disease from some farms that had been newly infected and very little disease in evidence. In places where the trouble is of long standing the results are more in doubt, but there can be no question that the work of our inspectors will result in a very considerable saving of money to many growers. This work is highly important and should certainly be continued in future seasons. The range of the disease appears at present to be restricted to a few districts. Further work should prove fruitful in preventing new outbreaks and in keeping the disease within bounds.

In addition to the regular control work our inspectors took a careful record of varieties affected, conditions influencing the virulence of the disease, etc. At the end of another season's work we hope to have very complete statistics regarding the present status of the disease in Nova Scotia, when I will be in a position to make an extended report on the subject.

Potato Inspection.

Early in the spring of the present year word reached us that Bermuda had placed an embargo on Canadian potatoes, including, of course, those from Nova Scotia. The Bermuda market is of considerable importance to certain sections of this province where potatoes of the Chili Red variety are grown as seed for the Bermuda potato growers. In order to preserve this trade for these farmers, representations were made to the Bermuda authorities to the effect that we were ready to undertake the inspection of all potatoes destined for these islands. A similar memorandum was prepared and sent to Mr. J. W. Eastham, who was Acting Dominion Botanist at this time, which we understand was transmitted to the Bermuda authorities. As a result of this, the Board of Agriculture of Bermuda passed, on April 23rd, regulations allowing the entrance of all potatoes certified by us to be free from disease. Immediately on receiving word of this, an article for the press was prepared, informing growers of this fact and offering to inspect the seed potatoes of all those growing potatoes for Bermuda, as far as our means would permit. Many growers availed themselves of this opportunity and large quantities of seed potatoes were inspected.

By means of articles published in the local press and from dealers and shippers who handle Chili Reds, we were able to get in touch with large numbers of growers and to inform them of the provisions of the new regulations.

In September, in company with Mr. E. J. Wortley, Director of Agriculture for Bermuda, I personally visited two thirds of the farmers growing these potatoes and made them acquainted with the details of our inspection and of the needs of the Bermuda growers. As a result of our efforts, the potato inspection has been carried on throughout, with an entire absence of friction of any kind. This in spite of the fact that this work is the most difficult of any we have yet undertaken, requiring the utmost care, patience and thoroughness. The following table shows the number of barrels inspected in the different districts:—

Locality	*Barrels.*
Church Street	1475
Grand Pre	1494
Woodville	50
N. Grande Pre	42
Billtown	20
Horton Landing	100
Lower Gaspereaux	65
Windsor Forks	133
St. Croix	40
Lakeville	345
Long Island	195
Canard	485
Hillaton	425
Upper Dyke Village	222
Avonport	435
Centreville	503
Hortonville	547
Wall Brook	290
Port Williams	99
McNutts Creek	1845
Clifton	3191
Lower Truro	470
Salmon River	88
Bible Hill	200

Princeport	107
Masstown	105
Debert	206
East Mines Station	110
Beaver Brook	1414
Lower Onslow	394
Glenholme	394
Maitland	105
Total No. of barrels	15594

Cost of Inspection Work.

The additional requirements of inspecting nursery stock, the inspection and demonstration work in Fire Blight and the inspection of all potatoes, besides the regular inspection for San Jose Scale and the Brown-tail Moth, have made our work continuous throughout the year. In fact a considerable over-lapping of the work has taken place at certain seasons. Though this naturally increases the cost of administration it will no doubt tend to enable us to retain the services of efficient inspectors, since we are able to offer them continuous employment.

Total cost of inspection work for the 12 months $6573.72

This includes the cost for all the different inspection services, but not the salary and expenses of the Entomologist and Assistant Entomologist. The federal grant in aid of agriculture has been of very material assistance to us in carrying on these important lines of work.

Experimental.

Entomological investigations take a long time to complete and as we have only had one season's work, the following cannot even be regarded as a preliminary report, but is merely for the purpose of indicating the lines of work undertaken.

One of our chief problems has been the study of the life-history of the common species of orchard aphids. The past summer has been spent largely in perfecting methods of technique for dealing with these insects. Some progress has been made with the Green Apple Aphis (Aphis pomi) and in the control work undertaken sufficient was accomplished to indicate useful lines of work for future experiments Particularly promising results were obtained by the use of flour paste, a preparation developed by Mr. W. B. Parker of the U.S. Bureau of Entomology for the control of Red Spider.

Our experiments indicate that by the use of this substance in combination with Blackleaf 40, we can use the latter insecticide one quarter weaker than ordinarily applied. Our work must of course be verified by subsequent experiments on a larger scale. This years' work was rendered difficult by the small acreage at our disposal and the scarcity of aphids throughout the country. The work done during the past season was chiefly important in that it is suggestive for more extensive operations in future seasons.

In regard to our Apple Maggot investigations, outbreaks have been located in Hants, Annapolis, Digby and Yarmouth counties. Territory on both sides of the main fruit belt has thus been found to be infested with this pest. The fact that infested hawthorns have been found even in the woods remote from dwellings indicates that if not a native pest it is at least an insect of long standing in this province.

Though we will not be ready for some time to publish anything regarding the apple maggot, a good start has been made this year both in our life-history studies and control work.

Another experiment has been started with a view to obtaining accurate statistics as to the cost of spraying apple orchards and the financial returns that may be expected under normal conditions.

A small orchard situated near Bridgetown and consisting of one hundred trees, one half Kings, and one half Golden Russets, has been selected for this purpose. On account of the uniformity in size and condition of the trees, this orchard is admirably adapted for our purpose.

Three quarters of the trees are being given the regular sprayings usual in good orchard practice, while one quarter are left unsprayed as a check. Arrangements have been made to market the product of the two plots separately. In this way we hope to secure reliable data as to the value of spraying in terms of dollars and cents. The spraying is being done for us by Mr. Fred Johnson, whose orchard adjoins.

Conclusion.

It will be seen from the foregoing report that the work of this department is of very broad scope and the duties connected with it continuous and exacting. Two lines of work undertaken, viz; Fire Blight and Potato Inspection were in the nature of emergencies, having not been provided for in the estimates. They were taken over by the Entomological Department in the absence of a field man in plant pathology. The administration of these different lines of work together with the regular routine of the department, make it out of the question for me to devote any great amount of time to research along entomological lines. For this reason the service of a man who can devote all his time to this work is of great value in the development of this department.

During the past season the cooperation of Mr. Geo. Sanders, Field Officer, Dominion Entomological Branch, has been of great service to me. I would also thank you, Sir, for your constant help and encouragement.

Respectfully Submitted,

WILLIAM H. BRITTAIN.

PART 4—HORTICULTURAL DEPARTMENT.

To M. Cumming, B. A., B. S. A.,
Secretary for Agriculture,
Truro, N. S.

Sir:—I have the honor to submit my eighth annual Report as Horticulturist.

The winter of 1913-14 was unusually severe. Much winter killing occured both at Truro and in other parts of the Province. The losses included herbaceous perennials, shrubs, newly set trees and nursery stock.

April and May were cold and backward months. Fruit trees were so late in starting into growth that it was thought there would be no danger from late spring frosts. Apple blossoms opened, however, only two or three days later than in the year before. In the earliest localities the blossoms of Gravensteins began to open on May 27th, and by the first week in June the trees were in full bloom. On the night of June 3rd, a heavy frost occurred in nearly all parts of the Province. The thermometer registered 24 to 26 degrees. On low areas and where the fruit blossoms were sufficiently advanced much injury resulted, especially to apples and strawberries. The sandy land section in the middle of the fruit district suffered most. Individual growers in that part lost in some cases from one half to two thirds of their crop and some growers even lost their whole crop. The total apple crop of the Province was doubtless reduced by one third or more and the strawberry crop considerably shortened. In spite of this the apple crop will probably amount to 830,000 barrels.

Model Orchards.

One model orchard was planted in 1914. This was at Stirling, Richmond County, and is under the care of Mr. John G. MacLeod. The total number of these orchards in the Province is now 36.

In my Annual Report of 1912 a map was published showing the distribution of these orchards throughout the Province and a brief account was given of the orchards planted in 1901, 1902 and 1903. Some of these orchards are now coming into bearing and are yielding fair crops of fruit. The following table gives the yield of some of these orchards in 1914:

Orchard at	Owned by	Planted in	Yield of Apples	Yield of Plums
Falkland Ridge, Annap. Co.	C. R. Marshall	1901	67½ bbls	5½ bus
So. Deerfield, Yar. Co.	J. M. Porter	1902	47 "	
Gore, Hants Co.	J. A. Wallace	1903	35 "	5 "
Bear River	H. M. Rice	1903	18 "	14 "
Meteghan Sta., Digby Co.	Mrs. Rose Deveau	1902	20 "	2 "
Central New Annan	Geo. McLellan	1903	20 "	6 "
Avondale Pictou Co.	H. F. McDonald	1902	15 "	2 "
Black River Inverness Co.	Lewis L. Smith	1902	20 "	"

The orchard at Bear River yielded about 60 baskets of peaches this year.

While these yields of apples may seem small to fruit growers who are accustomed to the yields from solid blocks of closely planted trees of productive varieties, it should be borne in mind that these orchards are planted with the trees 30 feet apart or more and that the orchards contain a number of varieties, some of which are being tested for their adaptability to the locality and which have not yet reached the bearing stage. Some of the model orchards have not done so well as these, but one object of the Model Orchard Act is to discover the sections of the Province in which the fruit growing industry can be profitably developed, and in this respect these orchards have been useful.

There were four model orchards planted in 1904; one each at Bridgewater, Lunenburg Co., Clyde River, Shelburne Co., Lochaber, Antigonish Co., and Glendale, Inverness Co.

The orchard at Bridgewater, owned by H. T. Hebb, was planted on a medium loam soil with a gentle south westerly slope. The chief varieties of apples planted were Blenheim, King, R. I. Greening, Baldwin, Stark, Northern Spy, Ben Davis and Wolfe River. The yield of apples in 1912 was 5 barrels; in 1913, ½ bbl., and in 1914, 12 bbls. Varieties doing well and recommended by the owner are Ribston, Baldwin, Stark, R. I. Greening, and Ben Davis.

The orchard at Clyde River was planted on light sandy loam with little or no slope. The chief varieties of apples planted were Wolfe River, Ribston, Blemheim, King, Baldwin, Stark, Ontario, Gano and Jonathan. Of these Wolfe River, King and Stark seem to have done the best.

The orchard at Lochaber was planted on a medium loam. It is situated near a lake towards which the site has a decided northerly slope. The varieties of apples planted here were Astrachan, Wealthy, Gravenstein, Dudley, MacIntosh Red, Hurlbut, Ontario, Stark, Crimson Beauty and Baxter. In 1912 there were 10 barrels of apples and 5½ bushels of plums; in 1914, 18 barrels of apples and 9 bushels of plums. Nearly all the varieties tried seem to have done well. The owner recommends MacIntosh Red, Ontario, Wagener, Stark, Hurlbut and Baxter. His reason for favoring some of these is that they are late keeping varieties. Ontario and Wagener are, however, rather tender trees for cold climates and quite subject to trunk and limb canker. If the prospective planter in this section had no objection to early varieties and wished hardy kinds, a good list to select from would be, Crimson Beauty, Yellow Transparent, Astrachan, Duchess, Wealthy, Dudley and MacIntosh Red.

The orchard at Glendale was planted on sandy loam with clay subsoil. The slope is towards the southeast. Part of this orchard was underdrained in 1908 and the rest in 1911. The chief varieties of apples are Yellow Transparent, Duchess, Wealthy, Ribston, MacIntosh Red and Stark. The yield of apples in 1912 was 3 barrels; in 1913, 1 barrel, and in 1914, 1½ barrels. The locality seems to be subject to late spring frosts which often kill the blossoms and also to extremely cold weather which causes some winter injury. The varieties which have done the best here are Yellow Transparent, Astrachan, Duchess, Wealthy and Baxter.

One model orchard was planted in 1905. This is situated in Welshtown, Shelburne Co. Half of the orchard is owned by Howard A. Harris, and half by John H. Harris, the two lots adjoining. The soil is a loam and the site level. The chief varieties of apples are Blenheim, Ribston, MacIntosh Red, Baldwin, Baxter, Stark and Northern Spy. The yield of apples in 1912 was 1½ barrels; in 1913, 4 barrels; and in 1914, 10 bbls. Probably any of the varieties grown in the Province will succeed in this section.

No model orchards were planted in 1906. In 1907 there were four planted; one each at Milton, Kempt, and New Grafton in Queens County, and one at Great Village, Colchester Co.

The orchard at Milton, Queens Co., owned by Mr. E. S. Hendry, is situated near the Mersey River, towards which it slopes. The soil is a stony loam. The apples planted here were Gravenstein, Blenheim, MacIntosh Red, Cox's Orange, Golden Russet, Hurlbut, which was top-grafted to

Nonpareil, and Haas, top-grafted to Northern Spy. The yield of apples in 1914 was 6 barrels. Any variety grown in the Province would likely succeed here.

The orchard at Kempt, Queens County, was planted on a farm owned by William C. MacPherson, who later sold the place to Mr. George Martin, the present owner. The soil is loam and the slope towards the northeast. The chief varieties are Blenheim, Ribston, MacIntosh Red, Hubbardston, Cox's Orange, Haas and Hurlbut. The latter has been top-grafted to Baldwin and Nonpareil. This orchard yielded one barrel of apples in 1914, and 3 bushels of plums. Any of the standard varieties of the fruit district will do well here.

The orchard at New Grafton, owned by Mr. W. P. Freeman, was planted on slaty loam with a level site. The chief varieties planted here are MacIntosh Red, Cox's Orange, Hubbardston, Hurlbut and Haas. The last two were top-grafted to Ribston, Rhode Island Greening and Baldwin. The yield of apples in 1914 was 5 barrels. Any of the varieties grown in the Province succeed well here.

The orchard at Great Village, owned by Mr. Suther Spencer, was planted on a sandy loam with a gentle southerly slope towards Cobequid Bay. The chief varieties of apples are Crimson Beauty, Duchess, Wealthy, MacIntosh Red, Stark, Haas and Hurlbut. The last two were top-grafted to King, Baldwin and Nonpareil. The yield of apples in 1914 was 7 barrels and of plums 3½ bushels.

Seven model orchards have been planted since 1907, one at the Monastery, Antigonish Co., in 1908; one each at Loch Side, Richmond Co., Enon, Cape Breton Co., and Sable River, Shelburne Co., in 1909; one at Whycocomagh, Inverness Co., and one at Sunny Brae, Pictou Co., in 1910, and one, as before stated, at Stirling, Richmond Co., in 1914.

Orchard Renovation.

In my last year's Report reference was made to the Orchard demonstration work which was begun in 1913. Seven orchards have now been selected in different parts of the Province to show what can be done by approved methods of treatment. These orchards are mostly of bearing age, and are situated as follows:—

Barss' Corner, Lunenburg Co., owned by Mr. Emery Delong.

Bridgewater, Lunenburg Co., owned by Mr. Wynn Crouse.

Hectanooga, Yarmouth Co., owned by Rev. P. Bracq.

Bridgetown, Annapolis County., owned by Mrs. M. E. Everett.

Williamsdale, Cumberland Co., owned by Mr. Fred Taylor

Pugwash, Cumberland Co., owned by Mr. D. M. Brown.

Orangedale, Inverness Co., owned by Mr. J. E. McFarlane.

The orchard at Bridgetown is situated in the Western part of the fruit district and the demonstration work is undertaken in cooperation with Prof. W. H. Brittain, the Provincial Entomologist.

The first operation to be performed in most of these orchards was to give the necessary pruning. Dead, weak, and diseased limbs were removed. The tree tops were thinned to admit air and sunlight and to encourage growth of new wood and larger size of fruit. The rough bark was scraped from the trunks and larger limbs to allow caustic sprays to reach the oyster shell bark lice and to destroy the hibernating places of the codling moth. Much of this work was done in the fall of 1913, that it might be out of the way when the pressure of spring work came on. Most of these orchards were in sod. Some were plowed in the fall of 1913, the others as early in the spring of 1914 as possible. They were then harrowed and the harrowing was repeated every ten days until midsummer, when a cover crop of buckwheat, vetch, or clover was sown to help rot the sod and add humus to the soil. Commercial fertilizer in the form of nitrate of soda, acid phosphate and muriate of potash were applied to each orchard at the rate of 200 lbs. nitrate of soda, 500 lbs. of acid phosphate, and 200 lbs. of muriate of potash per acre. By dividing the orchards into plots and applying these fertilizers in different combinations an effort is being made to test the value of the different fertilizers for orchard purposes.

Each orchard was given a dormant spray of lime-sulphur in the spring before the buds opened. The strength used was one gallon of commercial lime-sulphur to 9 gallons of water. The trunks, main limbs and branches of the trees were thoroughly covered with the spray to kill any scale insects that might be present and to clean the trees of "moss" or lichens. Later the orchards were sprayed once before the blossoms had opened and again just after the petals had fallen to control the black spot and prevent the attacks of certain insect pests. Had there been any danger of later injury a fourth and possibly a fifth spray would have been applied. The spray mixture used on the foliage was lime-sulphur, diluted to the summer strength, one to 30, with 2½ pounds of arsenate of lead to 40 gallons of spray mixture.

Orchard Demonstration Work.

The work of the horticultural representative, Mr. L. D. Robinson, which was begun in Lunenburg County in the fall of 1913, has been continued this year. Beginning in March, 1914, Mr. Robinson spent two months in North and South Queens, and in Lunenburg County. He visited the orchardists in the fruit sections of these counties, meeting them in their orchards, and discussing with them problems of orchard management, such as cultivation, fertilizing, pruning and spraying. He gave demonstrations in pruning, grafting, and making of lime-sulphur, and pointed out improvements which could be made in the prevailing methods.

The Vegetable Garden.

On account of the growth of the college and the erection of new buildings, the space available for horticultural crops near our class rooms has become less and less. This is unfortunate, because the place for a garden is near the buildings, where it can be seen, studied and cared for. On this diminishing space, however, an effort has been made to have as many of the garden crops represented as possible for the benefit of our summer students and visitors. The space devoted to each crop was necessarily small, in some cases only a row or two being grown, but it allowed our students and visitors to see about twenty different kinds of vegetables under cultivation.

At Plumdale Farm, three quarters of a mile east of the College, there is plenty of room for all the horticultural crops. The object has been to grow here some of all of the ordinary fruits and vegetables that can be grown in the Province, as well as a nursery of ornamental shrubs and trees so that students and visitors can see and get acquainted with the different kinds of horticultural plants.

A number of experiments have been undertaken with some of the important crops and records kept for comparison with results in later years. These include tests with explosives for use in soil for orchards, tests with dormant sprays, fertilizer tests with tomatoes, root crops and potatoes, variety tests with a number of vegetables, planting tests with potatoes, test of sulphur as a fertilizer, and test of different oils for use as fuel in protecting tender vegetables from frost.

Five acres of orchard were planted at the horticultural farm, Plumdale, in the Spring of 1914. The soil on which this orchard is planted is a sandy loam with a sandy subsoil.

About one third of the area is level, the remainder having a gentle southerly slope. An experiment with the use of dynamite in the planting of trees was tried here. The holes for thirty-eight trees were dynamited with charges varying from one quarter of a pound to one pound of the explosive. The remainder of the trees were planted without the use of dynamite. No difference in the growth of the trees was discernable throughout the season. The absence of any beneficial result from the use of dynamite in this instance was probably due to the sandy nature of the subsoil which made the loosening effect of the explosive unnecessary for the healthy growth of the tree.

A test was made with the use of nitrate of soda and caustic potash as a dormant spray on bearing apple trees. Such a spray in California had been reported to have increased the yield of apples five fold and to have advanced the blossoming of the trees several days over those unsprayed. The trial was made here on Ben Davis and Northern Spy trees. The effect was directly opposite to that reported from California. Trees sprayed with this mixture were delayed several days in the opening of their leaf and blossom buds, they had poorer foliage all through the season and bore a smaller crop of fruit than those which received a dormant spray of lime-sulphur or those not sprayed at all.

The experimental work with the potatoes begun last year by Prof. B. H. Landels and outlined on page 85 of his report for that year was transferred to the Horticultural Division and continued this year. The experiments were to be carried on for a five-year period. They include (1) a combined variety and fertilizer test, and (2) a test of size of cut and distance apart to plant the seed. To these was added a second fertilizer test to see what kind of plant food is most needed in the soil on which the test was made. The aim of the fertilizer test which was started last year and continued again this season was to find what amount of complete fertilizer made up of nitrate of soda, acid phosphate and muriate of potash in the proportion of 100 lbs. of the first, 400 lbs. of the second, and 100 lbs. of the third, is best to apply per acre in fertilizing for potatoes and also whether the use of potash on the soil of the college farm with this crop is beneficial. On one plot this fertilizer was applied at the rate of 600 lbs. per acre, on the second plot 1200 lbs. per acre and on the third plot, 1800 lbs. per acre. A fourth plot had the same application as the third except that the potash was omitted.

The results of this test were similar to those obtained last year by Prof. Landels and described in his report for that year. In the variery tests the results were somewhat different from those obtained last season and will be given after further trials have been made.

A fertilizer test was made with potatoes to see what element, or elements, of fertility were most needed in the soil for this crop at Plumdale Farm. Six plots, each containing 2253 sq. ft., were planted with Early New Queen potatoes. The rows were 26 inches apart and the seed one foot apart in the row. Plot 1 received no fertilizer. Plot 2 was fertilized with acid phosphate and muriate of potash at the rate of 800 lbs. of the former and 200 lbs. of the latter per acre. Plot 3 with nitrate of soda and muriate of potash at the rate of 200 lbs. each per acre. Plot 4 with nitrate of soda and acid phosphate, at the rate of 200 lbs. of the former and 800 lbs. of the latter per acre. Plot 5 with nitrate of soda, acid phosphate and muriate of potash, the first at the rate of 200 lbs. per acre, the second 800 lbs. and the third 200 lbs. per acre. Plot 6 received ground limestone at the rate of 4 tons per acre. The following table shows the yields per acre of the six plots:

Yields per acre of six plots planted with Early New Queen Potatoes.

	Plot 1. No fertilizer	Plot 2. 800 lbs. acid phosphate 200 lbs muriate of potash per acre.
Yield per acre.	243	320

	Plot 3 200 lbs. nitrate of soda. 200 lbs. muriate of potash per acre.	Plot 4. 200 lbs. nitrate of soda 800 lbs. acid Phosphate per acre
Yield per acre.	293	289

	Plot 5.	Plot 6.
	200 lbs. nitrate of soda 800 lbs acid phosphate. 200 lbs. muriate of potash per acre.	4 tons of ground limestone per acre.
Yield per acre.	355	225

A comparison of the yields of Plots 2 and 5 shows a gain of 35 bushels per acre due to the application of nitrate of soda. A comparison of Plots 3 and 5, shows a gain of 62 bushels per acre due to the application of acid phosphate while there is a difference in the yields of Plots 4 and 5 of 66 bushels per acre apparently due to the application of potash. The test of fifteen varieties of potatoes for yield was continued again this year. The results will be given along with those of other years in a later report.

Fertilizer tests were made with carrots, beets and parsnips. Plots seeded with these vegetables received applications of nitrate of soda, acid phosphate and muriate of potash or combinations of two of these at the rate of 200 lbs. of nitrate of soda, 500 lbs. of acid phosphate and 200 lbs. of muriate of potash per acre. As the ground on which this test was made was late in being prepared for the crop and there may have been some lack of uniformity in the soil of the different plots the test will be repeated again next year and with duplicate plots on another part of the farm. This season, however, the addition of acid phosphate appeared to give an increased yield with each vegetable. With beets the application of potash increased the yield as did also that of nitrate of soda. The details of this test will be given after further trials have been made.

An acre and a quarter was planted with tomatoes. Two sowings were made for this crop, one on March 17th, the other on March 31st. The plants from each sowing were twice transplanted before being planted out in the field. All the plants from the first sowing were first transplanted into flats, with the plants two inches apart each way. At the second transplanting, part of the plants were set into 4-inch pots from which they were later planted out into the field. The remainder were transplanted into flats with the plants 4 inches apart each way. From these flats they were later transplanted into the field.

The plants from the second sowing were also twice transplanted before going into the field, being handled in flats as the second lot from the first sowing. All the plants were set out in the field on June 26th. The land was in good condition,. A light dressing of rotted manure (ten or twelve tons per acre) had been applied in the spring and disced in after which the land was plowed and harrowed. At planting time an application of complete fertilizer consisting of 2% nitrogen, 8% phosphoric acid and 12% potash was given at the rate of 600 lbs per acre. As soon as the planting was done the land was thoroughly cultivated. Three weeks later nitrate of soda at the rate of 90 lbs. per acre was applied to the whole area, except one plot on which the application was made at the time of planting.

The different varieties of each sowing occupied plots of one twentieth of an acre. The yields from some of these plots are given below.

A. Yields of plants from seeds sown March 17th.

Bruce's Dominion Day	2378. lbs
Earliana	2085 "
Perfection	2013 "
Livingstons New Globe	1789 "

B. Yields of plants from seeds sown March 31st.

Bruce's Dominion Day	1999¾ "
Earliana	1966¾ "
Holmes Supreme	1871¾ "
Livingstone's New Globe	1827 "
Lister's Prolific	1589 "
Perfection	1481 "

Bruce's Dominion Day and Earliana gave the best yields. With the exception of Livingstone's New Globe the plants from the early sown seed gave larger yields than those from seeds sown March 31st.

A test was made of the relative merits of growing plants in flats (shallow boxes 3 inches deep) and in pots before plantout in the field. One half of the pot grown plants had the terminal buds pinched out when the plants had developed the sixth rough leaf. The following table shows the yields from plants treated in these ways;

Variety	Pots, terminal buds pinched	Pots, terminal buds not pinched	Flats
Bruce's Dominion Day...	767¾ lbs	673½ lbs	792¾ lbs
Earliana	734¾ "	615½ "	695 "
Liv. New Globe	562¾ "	481½ "	596½ "
Perfection	461 "	320 "	671 "

The yields of ripe fruit under the same conditions as those above are shown in the following table. Only two varieties produced ripe fruit of any account.

Variety	Pots, terminal buds pinched	Pots, terminal buds not pinched	Flats
Bruce's Dominion Day...	217 lbs	98 lbs.	135 lbs.
Earliana................	284 "	115½ "	95 "

These tests should be repeated several times before any definite conclusions are drawn. In the meantime the results are given for what they are worth. The immediate effect of removing the terminal buds from the potted plants was to make them grow more stocky and to branch out more than the unpinched plants. The effect on the crop seemed to be to give an earlier and larger yield of ripe fruit than where the plants were grown in flats or pots and not pinched.

Training plants on wire trellises gave an increase in ripe fruit of only 720 lbs. per acre with the first ripe fruit five days earlier than that on the untrained plants.

Late varieties are not profitable in this latitude. Of the early kinds tried here, Earliana and Dominion Day proved to be best.

Incidentally there has been some garden produce for sale. While it is not our purpose to enter into competition with local gardeners or to do anything to lessen the sale of their crops the attempt to dispose of some of this product has enabled us to gain a better insight into the marketing problem of this province. Our experience would indicate that an organization of producers on a cooperative basis is needed to enable them to dispose of their goods to best advantage.

Protection from Frost.

On account of the damage frequently done to the fruit and tender vegetable crops by the late spring and early fall frosts an effort is being made by this Division to test the feasibility of protecting these crops in this province by the use of smudges and heat from burning oils or other substances. Several kinds of oil were tested on the tomato crop here this fall. A supply of orchard heaters of different kinds has been obtained for further testing next spring.

Model Orchard, Great Village, N. S., Sept. 1913. Taken from the lower or south end.

Model Orchard at Enon, Cape Breton. Orchard Planted in 1909.

Box Packing School, Kentville, January 25th-30th, 1915.

Apple Packing School.

On the 22nd to the 25th of February, with the cooperation of the Fruit Division of the Dominion Department of Agriculture, an apple packing school was held at Kentville. Instruction was given in both box and barrel packing by Mr. P. J. Carey of the Fruit Division, Ottawa. The attendance varied from twenty-five to one hundred and twenty-five, on different days. The success of the school was also in a large measure due to the efforts of Prof. W. S. Blair of the Fruit Experimental Station, Kentville, N. S., and Prof. W. H. Brittain, Provincial Entomologist, Truro.

On September 16th to 19th a demonstration in box and barrel packing was held in the warehouse of the Berwick Fruit Company, Berwick, N. S. Mr. Carey again gave the instruction here and also made two visits to the warehouse of the Aylesford Fruit Company and gave instruction in box packing there. This was at the time when Gravensteins were being packed for shipment to the western market where the preference is given to the box over the barrel package.

Acknowledgements.

In the horticultural work at the Agricultural College, credit should be given to Mr. James Allan, for his efficient services as horticultural superintendent and to Mr. James Dickson, a graduate of this College, for his work in managing the greenhouses and supervising the experimental work. Mr. R. W. Donaldson, another graduate of this college, has rendered valuable assistance through the summer in connection with the work of the demonstration and model orchards. Mr. John Webb has continued as a most satisfactory foreman of Plumdale Farm.

Respectfully Submitted,

P. J. SHAW.

PART 5—REPORT OF THE FARM SUPERINTENDENT AND PROFESSOR OF AGRICULTURE.

Principal M. Cumming,
Secretary for Agriculture.

Sir:—I have the honor to submit herewith the Annual Report of the Nova Scotia Agricultural College Farm for the year 1914.

No change was made during the year in the foremen, who have charge of the actual work on the farm and in the barns. Mr. Thos. Hooper was continued as Farm Foreman and Manager of the Horse Barn, and Mr. Wm. Retson in charge of the cattle and swine.

The work of the year in general has been satisfactory. The farm crops yielded well, rather above the average, although hay was not quite as heavy as last year. The health of animals of all classes has been excellent.

Crop Report.

Oats.

Oats were sown on land plowed the previous fall. In 1913 part of this land raised a crop of turnips and part of it was in mowing. The oats on the turnip land grew exceptionally well. The straw was very tall, averaging five feet over a field of 8 acres. This land was well fertilized the year before for turnips and had nothing added this year for the oats.

Seeding was later than the year before. In 1913 the first oats were drilled in on April 26th, while this year seeding did not begin until May 13th. In 1913 the soil temperature at depth of seeding on April 26th was 52. F, while this year on May 13th it was only 45. F. In spite of the lateness of the season, however, the oats germinated quickly and grew strongly.

The oats were all treated with formaldehyde to prevent the growth of smut. One pint of formalin was added to 30 gallons of water and the bags of oats were soaked in this solution for half an hour and then the grain was spread out to dry. This treatment was applied just before the seed was sown and proved entirely satisfactory as no smut appeared in the crop.

The following varieties were sown in plots at the rate of 1½ to 2 bushels per acre.

Variety	Size of plot	Tons of straw and grain per acre	Yield of grain per acre	Per cent. of bulk
Banner (Waugh Strain)	1 acre	3.1	*72 bush	27.3
Banner (Brown Strain)	1 "	2.5	64 "	26.3
Ligowa	1 "	2.5	60 "	26.0
Kemp	1 "	2.25	57 "	26.3
Early Blossom	½ "	3.50	56 "	33.0

*Yield much reduced by army worm. See paragraph below.

It will be seen from the above that the two strains of Banner oats gave the largest yield of grain, while the Early Blossom, a "side oat" gave the largest yield of straw. The Brown strain of Banner oats did not have as good a chance as the Waugh as it was sown on sod land instead of turnip land.

None of these yields are heavy as the army worm attacked the oats in August and ate practically all the leaves from the stalks and also cut off many of the ripening kernels. It is impossible to say how much the yield was reduced but in walking through the field and selecting heads for seed, it seemed in many places as if a third of the stalks were stripped clean.

The main crop of oats, consisting of 16 acres on the upland and 11 acres on the marsh, has not been threshed as yet and the yield cannot be reported. The yield of straw was excellent, however, and as the army worm did not do much damage in these fields, we expect them to turn out well. These 27 acres were sown entirely with Banner Seed (Waugh strain), raised on the College Farm. The harvesting began on Sept. 10th and was finished on the 21st. The weather was favorable and the grain was housed in good condition.

Seeding for Grass.

Eight and one-half acres of oats and 1½ acres of wheat on the upland and all of the land in oats on the marsh were seeded to timothy and clover at the following rates per acre: On the upland 7 lbs. timothy, 6 lbs. red clover and 3 lbs. alsike clover, and on the marsh 8 lbs. timothy, 2 lbs. red clover and 4 lbs. alsike clover.

All this seeding started exceptionally well. A number of plots of oats and wheat were treated with ground limestone at the rate of 4 tons per acre, and where this was applied the clover grew more luxuriantly, but no difference could be detected in the grain crop. The army worm destroyed the clover and young timothy in part of the plots, so that when the oats were cut, the ground was practically bare except for the oat stubble. The clover and timothy came on again however and looked fairly well by the first of November. On the marsh 500 lbs. of Sydney Slag was applied per acre where the oats were sown. This was distributed by means of a fertilizer sower and judging by the growth of oat straw and new seeding, gave excellent results. In past years the same treatment has given good returns both in grain and in subsequent crops of hay.

Wheat.

Three one-half acre plots of wheat were grown on turnip land that was not plowed until spring. No fertilizer was used but one-half of each plot was treated with ground limestone at the rate of 4 tons per acre.

As far as the wheat was concerned no difference was noted in the limed and unlimed portions of the plots, but after the wheat was cut, the clover showed a more luxuriant growth on those parts where the limestone had been used.

The yields shown below were reduced by the army worm the same as in the case of the oats.

Variety	Yield of straw and grain on ½ acre	Yield of grain per acre
Marquis	1 ton 1280 lbs	42 bushels.
Red Fife	1 " 1280 "	38 2-3 "
White Russian	1 " 900 "	35 "

The seed was drilled in at the rate of 1½ bushels per acre on May 18th, and the grain was harvested on Sept. 10th.

Mangels.

Three acres of mangels were grown on land that raised corn the year before. The field received an application of about 20 tons of stable manure after the corn was removed in the fall, and was then plowed. In the spring it was thoroughly harrowed and worked up into a very fine smooth seed bed. The fertilizer used was then sowed broadcast over the field and then the land was drilled. The seed was sown on the 26th and 27th of May, at the rate of 10 lbs. per acre.

The following table gives the treatment of each plot and the yield. The seed used was Sutton's Yellow Intermediate, and the plots were each half an acre in size.

Plot	Fertilizer	Yield Bus	Yield per acre
1	Nitrate of Soda . . . . 100 lbs Muriate of Potash . . . . . . 100 Ground Bone 300	213	426
2	Nitrate of Soda . . . . 100 Ground Bone 300	315	630
3	Nitrate of Soda . . . . 100 Muriate of Potash . . . . . . 100 Acid Phosphate 300	327	654
4	Nitrate of Soda . . . . 100 Acid Phosphate 300	320	640
5	Nitrate of Soda . . . . 100 Muriate of Potash . . . . . . 100 Sydney Slag 300	373	746
6	Nitrate of Soda . . . . 100 Sydney Slag 300	357	714

Plot No. 1 was lighter than the others partly on account of the work of the cut worm in thinning the stand. The general stand was good and the mangels grew well in the early part of the summer. Later, however, in August and September they seemed to be affected by the dry weather and did not grow as large as was desirable. The heaviest yields were on the plots treated with slag instead of acid phosphate, but none of the plots gave as large returns as should be obtained from this crop. The quality of the mangels is excellent.

Turnips.

A six acre field on which corn was raised the year before was prepared for turnips in the same way as the mangel field had been treated, excepting that the manure was applied in the winter and plowed under in the spring. In places where the manure was short and fine it was worked in with the disc harrow, where it was strawy, it was turned under very lightly with the plow.

The fertilizer was applied in the row instead of broadcast as in the case of the mangels. The only reason for applying it in rows was because it was easier to get a certain number of pounds evenly distributed over the plot in this way than it was by the fertilizer sower. The rows were first made up and the fertilizer distributed in the bottom. The rows were then split with the double mould-board plow and the turnips drilled in on the top of the new row. The seed used was Sutton's Monarch Swede and it was sown at the rate of 3 lbs. per acre.

The following table shows the amount of fertilizer used and the yield of turnips. The plots each contained one acre.

Plot	Fertilizer	Yield per acre. bus.
7	Nitrate of Soda..........200 lbs	823
	Muriate of Potash......200	
	Acid Phosphate........800	
8	Nitrate of Soda.........200	
8	Nitrate of Soda.........200	824
	Muriate of Potash......200	
	Sydney Slag...........800	
9	Nitrate of Soda.........200	820
	Acid Phosphate........800	
10	Nitrate of Soda.........200	895
	Sydney Slag...........800	
11	Muriate of Potash......400	955
	Acid Phosphate........1000	
12	Muriate of Potash......400	
	Ground Bone..........200	930
	Acid Phosphate.......1000	

The seed was drilled in on June 9th and 10th, and the crop harvested the second week in November. The turnips, like the mangels, grew well in the early season, but the dry weather in September checked them. They grew fast again in October, but did not gain enough to give a high yield. The quality of the turnips is good and the yield may be considered fair.

In addition to the above six acres, two acres of the Corning Turnip were grown, from seed obtained from John Corning, Yarmouth. These were grown on lighter land than the others, but yielded very well considering the season, one acre gave 800 bus. and the other 745.

Two acres of soft turnips were grown for fall use and furnished a large amount of succulent feed when the pastures were short during October. These were pulled and fed without being topped.

Rape.

Two acres of rape were sown and furnished a lot of good feed for cows, bulls and hogs, during September and October. The variety sown was the New Cabbage Leaf. It grows luxuriantly on rich land and will furnish over 20 tons of green feed per acre. It is sown in rows at the same time as turnips and is thinned and weeded in the same way.

Alfalfa.

The great value of alfalfa as a forage crop makes it desirable that we should find out if possible how to grow it successfully in Nova Scotia. For this reason, in spite of past failures, we sowed one acre with Ontario Variegated alfalfa seed early in July.. The land was plowed in the fall of 1913, and manured during the winter. In the spring and early summer it was harrowed at frequent intervals until it was in excellent tilth and most of the weeds killed. It received eight tons of ground limestone, 4 tons being applied in the fall and 4 being applied in the spring, and 500 lbs of slag, 200 lbs. acid phosphate and 300 lbs. of bone meal. The seed was distributed broadcast from the grain drill in the same way that clover and timothy are sown. It germinated quickly and the young plants grew rapidly.

The stand was excellent and in a few weeks the plot showed a remarkably luxuriant growth. Before sowing the seed was treated with a culture of bacteria in order to inoculate it with the proper germ for gathering nitrogen.

Soiling Crops.

Oats, peas and vetch were sown together as early as the land could be worked in May. The seeding was at the rate of 1½ bushels oats, ¾ bus. Golden Vine field peas, and ½ bus. common vetch.

This crop grew well and furnished a large amount of green feed after the middle of July. Successive sowings were made so that a fresh piece was always coming on, and in this way green feed was always at hand for the cows, until the rape and fall turnips were ready in September.

Silage Crops—Corn.

Five acres of Compton's Early Corn was planted on clover sod, plowed in the fall. This land was manured at the rate of 20 tons to the acre, during the winter, and was plowed very lightly in the spring. The five acres received a total dressing in addition to the manure of 1000 lbs. of acid phosphate.

The season was late and cold and the corn grew slowly. It was planted June 3rd and cut and put in the silo on Oct. 7th and 8th. At this time no ears of any consequence had developed and the stocks were green and watery. Analysis showed that it contained 16% dry matter. The five acres yielded only 40 tons green silage which is a light crop.

The complete analysis of this silage is given below in connection with oat and pea silage.

Oats, Peas and Vetch.

Five and seven-tenths acres were seeded to the above grains at the rate of 1½ bus. oats, 3-4 bus. peas and ½ bus. common vetch. This was put on land that had been in grass the year before. The sod, containing a large proportion of clover was plowed in the fall. It received a light dressing of manure in the winter and was well harrowed in the spring. The seed was drilled in on May 13th and cut with the mowing machine and put into the silo through the ensilage cutter on Aug. 2nd.

The 5.7 acres gave 65 tons of green silage, containing 26% of dry matter. This was at the rate of 11.4 tons per acre, while the corn only gave 8 tons per acre. Furthermore, the oats, peas and vetch contained 8% more dry matter than the corn. The complete analysis of the silage from the two crops is given in the following table:—

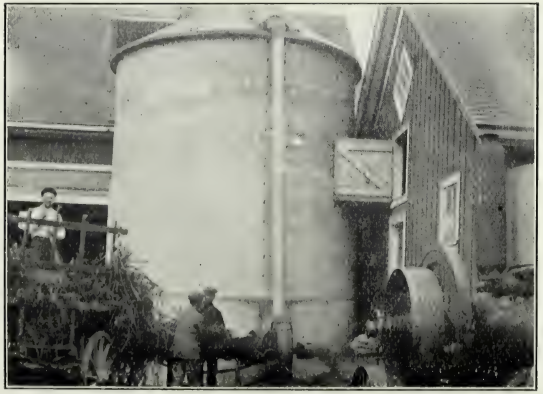
	Oat, Pea and Vetch Silage Per cent.	Corn Silage Per cent.
Water	71.85	80.00
Ash	1.59	1.42
Protein	2.31	2.37
Carbolhydrates	23.42	15.33
Fat	0.83	0.88

Oats, Barley and Peas.

One acre was sown to oats, barley and peas at the rate of 1 bus. oats, 1 bus. barley and ½ bus. peas. It was sown on May 19th and harvested on Sept. 15th. It gave a yield of

A crop of Oats, Peas and Vetches averaging over 11 tons of green feed per acre.

Harvesting Peas, Oats and Vetches with ordinary mowing machine and hay wagon.



Putting green Oats, Peas and Vetches through the ensilage cutter and into the silo on the College Farm.

Hand selection of Oats for seed on the College Farm by cutting model heads.

4.13 tons of grain and straw and 81¾ bus. of grain. This was rather hard to cure as the peas were quite green, but it gave a large amount of excellent feed when mashed for the cows.

Hay.

The hay crop was not as heavy as last year. The hard winter killed practically all the clover. One piece of new seeding on the marsh came through all right and furnished a heavy crop of red and alsike clover.

Haying began on July 18th, the same date as last year. Field No. 1, new seeded, gave 27 tons from 10 acres, and No. 4 gave 8.3 tons from 5 acres. The Clish Marsh where the Clover was not killed, gave 23.73 tons from 6 acres.. This was a wet piece of marsh that two years ago did not produce more than half a ton to the acre, and that a grade of very poor quality. In the fall of 1912 this land was underdrained by means of the ditching machine. It was plowed and in seeded in the spring of 1913, also given a dressing of 500 lbs of slag per acre. The wonderful results are seen in the hay crop obtained this year.

The remainder of the marsh averaged about 2 tons per acre. The total crop was considerably less than last year, being approximately 150 tons from 64 acres.

Fertilizers.

The commercial fertilizers used during the year were nitrate of soda, muriate of potash, acid phosphate, Sydney slag, and bone meal.

In the experiments with roots the best results were obtained from phosphonic acid either in the form of acid phosphate, or in the Sydney slag. The addition of either nitrate of soda, or muriate of potash, or both, to the acid phosphate or slag did not materially increase the yield.

Ground bone gave the lowest returns in the root crop.

Plots 5 and 6 in the mangel field, where slag was used instead of the acid phosphate gave the best yields. In the turnip fields plots 7 to 9 gave practically the same result, in spite of the fact that on plots 7 and 8 four hundred of muriate and nitrate together were used in addition to the phosphoric and, while on plot 9 only 200 of nitrate was used. This would indicate that the potash was of no advantage on this land for turnips. On plot 10 Sydney slag with nitrate gave 75 bushels more than acid phosphate with nitrate on plot 9.

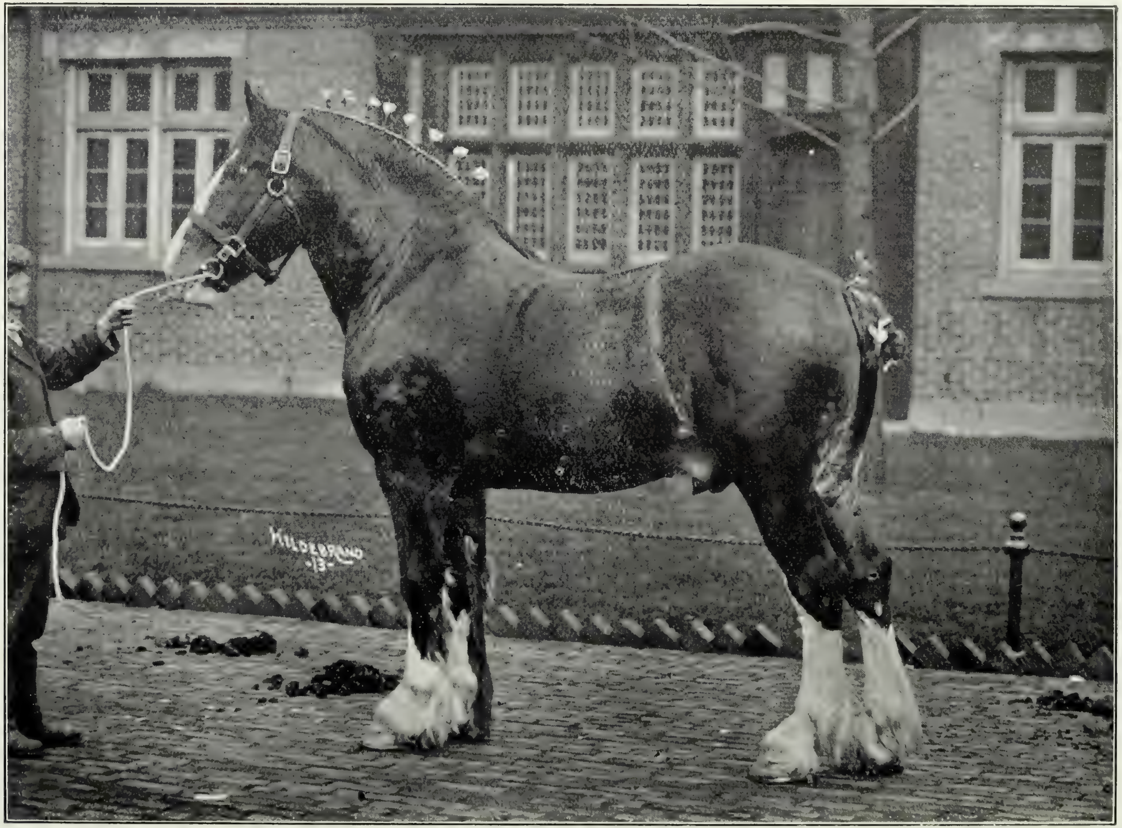
On plots 11 and 12, 200 pounds additional acid phosphate, 1000 instead of 800 lbs, gave an increase of about 100 bushels per acre.

In addition to commercial fertilizers used experiments were started with ground limestone. This material is not a direct fertilizer, as lime is not needed in our soils for plant food. Its action is indirect as it helps to make plant food soluble, and improves the condition of the soil for the growth of various helpful bacteria.

Our Nova Scotia soils contain a large amount of insoluble potash, and lime helps to make this available for the plant. It also helps to conserve the soluble phosphoric acid by combining with it in a semi-soluble form instead of allowing it to form insoluble compounds with alumina and iron. It also hastens the decay of vegetable matter thus preparing it for the use of plants. For this reason lime is especially valuable on land rich in decaying organic matter.

It has a number of other beneficial actions chief of which is its power to neutralize acids and thus furnish an alkaline soil suitable for the development of the bacteria that live on the roots of the leguminous plants (clover, peas, etc.) and that gather nitrogen from the inexhaustible supplies of the atmosphere. It is largely because of this action that lime, and fertilizers containing lime such as ashes and slags, are universally valuable in producing a crop of clover. In the past it has been customary to use lime in the burned, or quick-lime form. Of late years, however, some very prominent scientists and practical experimenters are claiming that the raw rock ground into a powder is better for the average soil than the burned lime.

The main objections to the burned lime are its caustic action on the soil that may cause a too rapid burning up of the vegetable matter, the ease with which it dissolves, and is washed away, and the unpleasant work connected with its distribution on the land. It is claimed that the ground rock does away with all the above objections and at the same time furnishes all the good points of the quick-lime. Prof. C. G. Hopkins of the University of Illinois one of the greatest soil experts in the United States says in his book on Soil Fertility (page 160) "With the development of rock-crushing and rock grinding machinery, fine ground natural unburned limestone can be had, and where this material can be gotten at *reasonable cost*, it replaces all other forms of lime used for the improvement of normal soils."



Clydesdale Stallion, "Lord Ullin," No. 17363 by Sir Hugo. Lord Ullin was 1st prize, 3 year old at the International Live Stock Exposition in Chicago in 1913, and is now premier Clydesdale Stallion at the Nova Scotia Agricultural College

In order to test the value of the ground lime stone it was applied to various crops at the rate of 4 tons per acre. This heavy dressing is made necessary because the limestone becomes available slowly and a large amount must be present in order to get the necessary result quickly. As it continues to become available constantly by slow solution this one heavy dressing is all that is needed for a number of years; possibly once in 10 years for many soils.

The expense of this application is quite heavy unless the lime stone can be obtained at a low price. In some places, for instance the State of Illinois, it is obtained F. O. B. at the quarry for $1.00 per ton. Furthermore the railroads of Illinois give an extremely low freight rate for this material in train load lots. The people of Illinois who have a large amount of prairie soil rich in humus, are able to use great quantities of the lime-stone with excellent results. For this reason whole train loads can be shipped to one point, and the freight rate is consequently made extremely low. We have not carried our experiments far enough to determine what we can afford to pay for this material in Nova Scotia. Its value for any giving farm will depend largely upon the local conditions. One hundred pounds of ground limestone will produce 56 pounds of quick lime.

In our experiments started this year, the only result noticeable was an increase in the size and vigor of the clover plants on the new seeding, and an excellent start for the alfalfa. It will be interesting to note the result in the yields of these crops next year.

Live Stock.

The live stock on the farm at the present time (Dec. 1, 1914) consists of 30 horses, 85 cattle, and 19 swine.

Horses.

The Clydesdale stallion, Royal Baron, that has stood at the College barn for the last four years, was sold in March and replaced by Lord Ullin.

Lord Ullin is a four year old, imported from Scotland by Graham Bros., Claremont, Ont., in the summer of 1913. He won first in his class at Toronto last fall and first and reserve championship at the International Live Stock Show in Chicago in December of last year.

Sire, Sir Hugo (10924) by Sir Everard (5653).

Dam, Diana's Pride (15096) by Baron's Pride (9122).

Lord Ullin is bred on the most direct lines from the best of Clydesdale blood on both sides of his pedigree. His Sire, Sir Hugo, is a son of Sir Everard and a half brother on his Sire's side, of Baron's Pride.. Sir Hugo himself, is one of those big quality horses that are in such great demand at the present time. The following prices paid in Scotland for some of his sons (half-brothers of Lord Ullin) convey some idea of the esteem in which he is held in that country: Sir Rudolph (16086) $8,000.00; Sir Dighton (13760) $4300. At a dispersal held in Februray, 1912, sixteen stallions and colts got by Sir Hugo realized an average of $1245.00. Sir Hugo traces back, through Sir Everard and Top Gallant, to the great Darnley (222).

Dam: Diana's Pride, the dam of Lord Ullin, was an exceptionally good breeding mare and a winner of many prizes. Her Sire, Baron's Pride, was by far and away the greatest breeding stallion ever known amongst Clydesdales the world over. Her Dam, Lady Diana, was a great breeding and prize winning mare, having won first prizes in 1895 and '96 at the best shows in Scotland. Diana's Pride traces on her dam's side in two lines directly to the great Prince of Wales (673).

Lord Ullin, therefore, carries on both sides of his pedigree the pre-potent blood of the two greatest sires of their time, Darnley (222) and Prince of Wales (672), and he inherits these lines of blood through the most famous and prepotent descendants of those horses. Lord Ullin is himself a horse of exceptional quality and style and stands on the best of feet and legs. He is of large size, promising to mature into a horse of over a ton weight. Combining such outstanding individuality with such suburb breeding, he ought to prove a great acquisition to the draft horse breeding interests of Nova Scotia.

The remaining stallions are the same as last year. Achille was bred to 17 mares, Cliffe Rosador to 12, and Lucifer 2nd to 7. The three year old Clydesdale Flash Royal was bred to 29 mares, and Lord Ullin to 52.

The two year old Royal Thomas and the yearling College Regent are both in good condition and growing well.

The remaining horses on the farm are four imported Clydesdale mares and three home bred; one Hackney mare, Queen Louise, one Hackney gelding, seven grade work horses and one three year old cross bred filly by Lucifer, out of a Clyde mare. The entire Hackney colt reported last year died when eight months old from injuries received in the stall.

Two colts were foaled during the year and are both doing well. College Belle, a pure bred Clydesdale, gave birth to a filly foal by Royal Baron, and Miss Barbara, also a pure bred Clydesdale gave birth to a stallion foal by the same horse. Five pure bred Clydesdale mares are in foal at the present time to Lord Ullin, and one grade mare to Cliffe Rosador.

Cattle.

As reported last year, the Bang system of handling cattle that have reacted to the tuberculin test was adopted two years ago and is still in use. The calves dropped by reacting cows are removed as soon as born to a separate stable. I am pleased to report that none of these calves born since May, 1913, have reacted to the test. In fact no animals of any age born on the farm have reacted since that date. Since removing the reacting cows to a quarantine barn a mile away from the main College barns, the results have been quite satisfactory. When the reacting cattle are kept in barns near healthy cattle, where attendants can easily pass from one barn to the other, it is almost impossible to avoid carrying the disease to the non-reactors. For this reason, we removed the reactors to a distant barn last summer and since that time have had excellent success with the system.

The following is a brief description of the cattle on the farm at the present time. Total number 85.

Holsteins—Number 31.

The Holstein herd consists of the herd bull, College Johanna Lad, reported last year as the bull imported from Connecticut. He has done exceptionally well during the year and has developed into a large, vigorous, active animal. Six young bulls from 14 months to 6 months old are on the farm and five of them are for sale.* The remainder of the Holstein herd consists of 16 cows of milking age and 8 head of young stock. No Holsteins were bought during the year.

Ayrshires—Number 33.

The herd bull is Gardrum Jim, a three year old bred by George Retson, Ayrshire, Scotland. Seven young bulls, ranging in age from 15 months down to 3 months are on the place and four of them will be sold.*

The remainder of the herd consists of 15 cows of milking age, and 10 head of young stock.

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* All sold since the above was written.

Two heifers of good promise were bought during the year from C. P. Blanchard.

Shorthorns— Number 21.

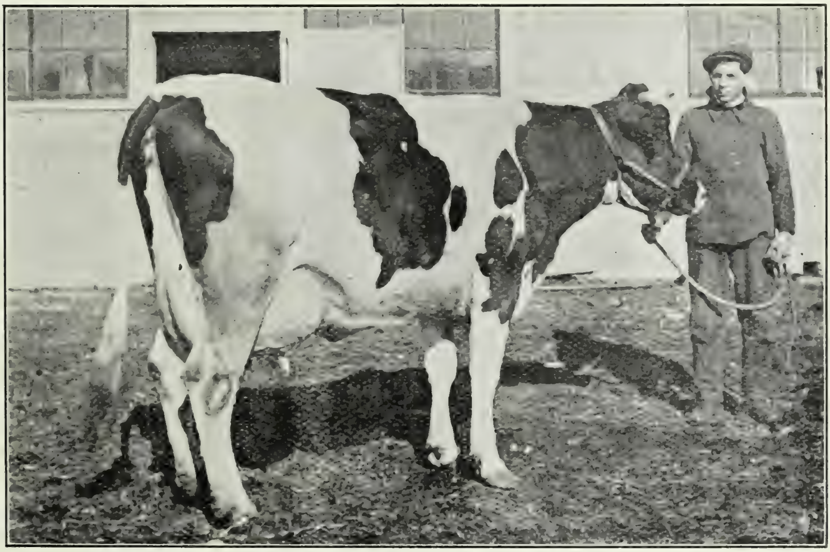
The stock bull is Brilliant Morning reported last year. Three bull calves are on hand and will be sold if they develop properly.

The remainder of the herd consists of 7 milking cows and 10 head of young stock.

No Shorthorns were bought during the year.

The following table shows the work done by the cows during the past year.

Four year old Ayrshire heifer, Eastcourt Merrymaid, No. 37542. Her record as a 3 year old last year, during her first lactation period of 10 months, was 8083.4 pounds of milk, and 334.1 pounds of fat equal to 417.6 pounds of butter, 80% fat She has given this year (1915) with 2nd calf 58 pounds milk in one day.



Four year old Holstein heifer, Flora Rooker Posch, No. 16960. Her record as a 3 year old last year during her first lactation period of 12 months was 15,569.7 pounds of milk, and 494.66 pounds of fat equal to 618.3 pounds of butter, 80% fat. She has given this year (1915) with 2nd calf 89 pounds milk in one day.

Two Dairy Queens at the College Farm.

Name	Breed	Age	Date of Last Freshening	No. of Days in Milk	Lbs. of Milk since Freshening	Lbs. Milk from Nov. 1st to Nov. 1st	Per cent. Fat	Remarks
Maple Grove Louise De Kol	Holstein	12	Mar 26-13	579	15464.0	6672	3.6	
Buffalo Girls Posch	"	11	May 22-14	183	3731.6	5816	3.0	
Victoria Calamity Clay	"	8	July 19-13	381	14815.0	14183	3.3	
Jemima Wayne Sarcastic	"	8	Nov. 30-13	333	13771.	13771	3.2	Dropped a fine bull calf.
College Flora	"	6	Feb. 22-14	249	9704.	9947	3.5	A Heifer Calf.
Spiuks Butter Girl	"	6	Dec. 17-13	313	9208.	9208	3.7	
Artis Rosie	"	6	Jan. 10-14	292	15540	15690	3.5	A Heifer Calf.
Emma of Evergreen 2nd	"	5	Nov. 26-13	335	16199.	16199	3.2	A Bull Calf.
Cobequid Rooker La Honda	"	5	May 22-14	257	7797.	8990	3.4	
Jean Aaggie DeKol	"	4	Mar. 10-14	231	7683	8559	3.0	
Mechthilde DePride	"	3	Oct. 20-13	374	12315	12282	3.3	A Bull Calf.
Victoria Pauline Clay	"	3	Oct. 3-13	381	11860	11299	3.8	A Bull Calf.
Miss Mina Rooker	"	3	Oct. 11-14	16	647	647	—	First Calf
Flora Rooker Posch	"	2	Sept. 21-13	404	16258	14263	3.3	First Calf, a fine Heifer
Lidy Posch DeKol	"	2	Oct. 15-13	381	9603	9104	3.2	First Calf.
Pauline Sadie Vale	"	3	Oct. 23-14	6	267	267	—	First Calf.
Scotties White Floss	Ayrshire	7	Oct. 16-14	11	565	5332	3.4	A Heifer Calf.
Gardrum Brandy 2nd	"	6	Nov. 16-13	267	7386	7386	3.5	A Bull Calf.
College Merrymaid	"	6	July 10-14	113	3260	5205	3.4	A Heifer Calf.
Harelaw Cherry 3rd	"	6	Mar. 27-14	215	4824	4924	3.6	A Heifer Calf.
Craig 2nd of St. Annes	"	5	May 5-14	175	5392	5994	3.7	A Bull Calf.
White Bessie	"	5	Nov. 29-13	324	10017	10017	3.8	A Bull Heifer.
Gardrum Bonnie Jean	"	4	Feb. 10-14	261	8338	8338	3.6	
Eastcourt Miss Buttons	"	4	Sept. 25-14	32	1278	7171	3.3	A Heifer Calf.
Miss Doris	"	3	Feb. 15-14	255	6790	6790	3.6	A Bull Calf.
Eastcourt Merrymaid	"	3	Feb. 22-14	249	7409	7409	4.1	A Heifer Calf.
Princess Laurie	"	3	Feb. 17-14	101	1516	1516	3.5	A Bull Calf.
Hillside Bright Smiles	"	3	Sept. 1-14	87	1446	1446	3.5	A Bull Calf.
Jessie 2nd	"	2	Dec. 18-13	218	3007	3007	3.5	
Princess May	"	2	Nov. 26-13	335	6897	6897	3.6	A Heifer Calf.
Princess Beatrice	"	2	Dec. 24-13	157	2926	2926	4.0	

Name	Breed	Age	Date of Last Freshening	No. of Days in Milk	Lbs. of Milk since Freshening	Lbs. Milk from Nov. 1st to Nov. 1st.	Per cent. Fat	Remarks
Village Queen 5th	Shorthorn	10	Aborted	——	———	———	——	
Roan Fanny	"	8	June 5-13	358	8018	3447	4.8	A Bull Calf
Boyne Lady 3rd	"	7	Apr. 29-14	184	3600	3600	4.2	A Heifer Calf.
Golden Beauty	"	7	Sept. 26-14	——	———	———	——	A Bull Calf.
Isabel Ruth	"	5	Dec. 26-13	——	———	———	——	A Heifer Calf
Village Belle	"	5	Feb. 14-14	255	4491	4491	4.8	Twins Bull and heifer
Roaalind	"	3	Oct. 19-13	103	844	884	——	Heifer.

It will be noted from a study of the above table that a number of the cows made very good records. The 16 Holstein cows made an average of 10303 lbs. of milk each in an average lactation period of 296 days or less than 10 months. Five of them made 75000 lbs of milk in the first 12 months after freshening, an average of 15000 lbs each.

Emma of Evergreen 2nd gave 16199 lbs. in 335 days, (11 months), and Victoria Calamity Clay gave 14815 lbs. in 381 days after, Oct. 16th altho she freshened in July, and travelled here from Ontario in October, and thus made the above record in a new climate and in strange surroundings.

Artis Rosie made 15540 lbs. in 322 days and is due to calve again in 13 months from date of previous calving.

Victoria Pauline Clay, a daughter of the great cow, Victoria Calamity Clay, calved in Ontario Oct. 3rd and was started for Nova Scotia the next day, when she arrived here it was found that one teat was blind, and she never gave any milk from that quarter. In spite of that she has made as a two year old, 11860 lbs. of milk in 381 days and has an average test of 3.8.

Flora Rooker Posch, reported last year as the promising 2 year old heifer just calved, a daughter of the famous old cow, Flora Wayne, owned by the College, has made a great year's record. She calved on Sept. 21st, 1913, and was then 2 years and 8 months old. In the following 12 months to Sept. 21st, 1914 she gave a trifle over 15000 lbs. of milk. She is a good strong heifer and will undoubtedly make a great cow when mature.

The Shorthorn, Roan Fanny proved herself a cow of fine milking ability. She calved in June 1913, and in the following 12 months gave 8018 lbs. of milk testing 4.8. This is a splendid record for a Shorthorn, and we hope her calves will improve the milking averages of this breed in the College barns.

Feeding the big milkers so that they will do their pest is a very important part of barn management. Emma of Evergreen may be taken as a sample of the way the heavy milkers are fed. During the winter months she received an average of 15 lbs. of hay, 14 lbs. of grain, and 80 lbs. of roots per day. When the roots gave out in March corn silage was substituted. This silage was from immature corn, and contained no corn kernels.

The amount of feed eaten during the year, and its cost was approximately as follows:—

		Lbs.	Cost
Hay....	15 lbs per day for 215 days......	3325 .. $12.00 per ton	$19.95
Grain...	16 " " " 180 "	2880 .. 30.00 "	43.20
" ..	6 " " " 93 "	558 .. 30.00 "	8.37
Turnips.	80 " " " 120 "	160 Bus .. 8c	12.80
Silage...	35 " " " 80 "	2800 .. 3.00 "	4.20
Pasture.	4 months......................	.. 1.25	5.00
Green Feed, Oats, Peas and vetch, and Turnip and Rape 3 months ..			4.50
			$98.02

This shows that Emma ate nearly $100.00 worth of food in one year. This seems a large amount until it is set over against the pounds of milk she gave. The amount as shown by the table is 16199 lbs, equal to 6230 quarts. Allowing 3½ cents per quart, or 1.34½ per hundred, this would amount to $218.05, and subtracting $98.02 from this leaves $120.03 above the cost of feed. Comparing this with the average cow of Nova Scotia that gives 3500 lbs in one year, equal to 1346 quarts, we get only $47.11. This same average cow can be fed on about $45.00, leaving $2.11 above cost of feed.

Another one of the heavy milkers Artis Rosie did not eat as much grain as Emma. She made her record in 292 days instead of 335, and altho she ate a little more per day than Emma for a short time, she did not keep it up as long. She ate practically the same roughage and turnips as Emma, but her grain bill was only $43.20 instead of $51.57. This made her total bill for the year $89.65. Her yield was 6034 quarts which at 3½ cents equals $211.19, and subtracting $89.65 from this leaves her a balance above cost of feed of $121.54, just $1.51 more than Emma.

She ate 18 lbs. of grain per day for 120 days, and 6 lbs. per day for 120 days, making a total of 2880 lbs. at $30.00 per ton, or $43.20.

Another example might be taken from the Ayrshires. White Bessie calved 3 days after Emma of Evergreen 2nd and was fed for the same length of time. Altho a much smaller cow she ate about the same amount of hay as Emma. She ate less grain and turnips however. Her bill being as follows:—

Hay....	15 lbs. per day..................	....	$19.95
Grain...	12 " " " 180 days	2160 .. $30.00 per ton	32.40
" ...	12 " " " 93 "	558 .. 30.00 "	8.37
Turnips.	60 " " " 120 "	120 bus. .. 8c	9.60
Silage...	30 " " " 80 "	2400 .. 3.00 "	3.60
Pasture.	(very poor) 4 months.............	.. 75c	3.00
Green Feed 4 months.....................		.. 1.50	6.00
			$82.92

White Bessie's yield was 10017 lbs. This equals 3853 quarts and at the same price as given above 3½cents per quart, or $1.34½ per 100, would bring $134.85. Subtracting the cost of the feed from this amount leaves $51.93. This showing is not very high in comparison with the Holstein cows. Emma of Evergreen 2nd and Artis Rosie. Figured on a fat basis the difference would not be so great altho it would still be in favor of the Holstein. This must not be taken as an attempt to prove that the Holstein is better than the Ayrshire as a breed. It only happens that the College owns some exceptionally fine specimens of the Holstein breed and nothing remarkable in the Ayrshire breed. If the comparison was made between another Holstein, say Cobequid Rooker LaHonda, the result would be greatly in favor of the Ayrshire.

If we compare Emma and White Bessie on a butter basis we find that Emma does not make as much money when her butter is sold at 30 cents per pound and the skimmed milk at 25 cents per 100, as she does when the whole milk is sold for $1.34½ per 100, while White Bessie makes more. The account with the two cows would stand as follows:—

Account for Emma of Evergreen 2nd.

Milk in one year	16199 lbs.
Test per cent	3.2%
Amount of butter fat	518.36 lbs.
Butter— Fat 1 1-6	605.75 lbs.
Cash for butter .. 30 cts.	$181.72
Value of 12000 lbs skim milk 25 cts. pere cent	$30.00
Total for butter and skim milk	$211.72
Total for milk sold .. $1.34½ per 100	218.05

Account foı White Bessie.

Milk in one year	10017 lbs.
Test	3.8%
Amount of butter fat	444.08 lbs
Amount of butter fat	380.6 lbs
Butter fat plus one-sixth	444.08"
Cash for butter .. 30 cts.	$132.22
Value of 8000 lbs. skim milk .. 25c per cent	$20.00
Total value of butter and skim milk	$152.22
Total for milk sold .. $1.34½ per cent	$134.85

It will be seen from the figures that Emma was $6.33 behind when her milk was sold as butter, while White Bessie was $17.37 ahead. The large amount of milk given by Emma enabled her to remain ahead of White Bessie however even on a butter basis. It is to be regretted that the College does not own some Ayrshires cows that are in the same class with the Holsteins cited. We hope in the near future to have this condition remedied from stock of our own breeding. as it is well known that great milking blood can be obtained in the Ayrshire breed.

Swine.

The work with swine has been confined to the Berkshire and Yorkshire breeds with an occasional cross between the two. At present we have 9 Yorkshire sows, and 6 Berkshires with a stock boar of each breed. Three of the Yorkshire sows are due to farrow in March, 1915, and five (5) of the Berkshires.

During the year we sold 72 young pigs from the Yorkshire sows, and 41 from the Berkshires. The Yorkshires averaged 10 pigs to the litter, and the Berkshires 8. These pigs were sold for $5.00 each when registered, and $4.00 when not registered.

The general results with the pigs have been fairly satisfactory. One litter of grade pigs was lost from all dying suddenly without any apparent reason. The sow and young pigs were turned out for the first time on a hot day and the weather may have caused their death. Another litter was lost because the sow (5 years old) was old and clumsy and killed most of the pigs. Barring these accidents the pigs did well, and are in excellent condition for next springs litters. Four of the Yorkshire sows to farrow next spring were bought last summer from J. E. Brethour of Burford, Ont. They are good sows and are a valuable addition to our breeding stock.

In conclusion I may say that the work of the year has been carried on in an excellent spirit by all the men on the place. Mr. Hooper as Farm Foreman and Mr. Retson as Herdsman, have taken pride in keeping their departments up to a high standard of efficiency. Mr. Aaron Crosby in the diary has made a fine quality of butter and kept the dairy building in excellent condition.

I am indebted to Mr. S. Moore of the Dom. Seed Department for valuable advice in connection with growing seed and roots.

The analysis of silage was made by Prof. L. C. Harlow who has always been ready to assist in solving chemical problems.

The keeping of the accounts of all experimental plots and records of animals has been in the hands of Mr. P. L. San ford who graduated from the Agricultural Course last spring. and who has shown himself competent and obliging in all his work.

Respectfully Submitted,

JOHN M. TRUEMAN.

PART 6—REPORT OF THE SUPERINTENDENT OF DRAINAGE DEPARTMENT.

M. Cumming, Esq.,
Secretary for Agriculture,
Truro, N. S.

Sir:—I hereby submit the following report of the Drainage Department during the year.

Previous to the present season, the work of this Department and that with Field Crops have been carried on together. F. L. Fuller, Supt. of Agricultural Societies, handles nearly all the outside work with Field Crops Improvement, Standing Fields Competitions, etc. I had charge of the plot experiments on the College Farm, except where large plots were required, which we were obliged to handle in the Farm Department. The instruction in Field Crops given in our regular and Short Courses has been in my care except where outside men have been brought in, while I have gone outside with some Experimental Union Work, along lines which had been started some years ago but were not being followed up. This work, as I have followed it, has mainly been done through our students.

The Drainage Department has also been divided. Mr. Fuller has had charge of the Traction Ditcher owned by the Department, while I have done the instruction work and the work of our Drainage Survey Campaign.

In the spring of 1914, the Farm experiments with grain and roots were put under the Farm Department. The potato experiments were given to the Horticultural Department. I still retain the Experimental Union work referred to, the instruction work of the College in soil and crop handling and judging as well as a course in general agriculture with the Rural Science School. The entire charge of the Drainage Department was also given over to me. The instruction work of this Department is taken up mainly with the

Senior, or second year class and consists of a field course in surveying and practical farm drainage, with lectures on the principals involved. Owing to weather conditions at the time of our regular opening, early in November, it has been impossible to do satisfactory field work. This year the students were offered a chance to enter on Oct. 21st, for field work in this subject and in Botany. Seventy-five per cent of the class availed themselves of this offer, while 15% more came the beginning of the succeeding week. This gave them a weeks start on those who entered on the regular date, Nov. 3rd. The results of this move have been more satisfactory even than were expected and have contributed toward better work in all departments.

Drainage Survey Work.

This year, for the first time, an assistant was employed in this part of the work, and during the early part of the season we were able to overtake the greater part of the surveying work which was held over from last year, as well as some new work. About 600 acres were surveyed. In several localities field meetings were held on farms which we were surveying. These took the form of demonstrations. Beside these field meetings, I attended nine meetings, arranged by the Dairy Department, in different localities. The interest in the subject warrants the pushing of this line of work. This work was done during early summer. Later, our time was more fully taken up with actual drainage operations and only scattered surveys were made.

Ditching Machine.

J. B. Joyce, who has operated this machine for several seasons was again in charge. The machine, which was left over winter on the farm of C. A. Archibald, Clifton, was not started until rather late in the season, as the spring proved late and the land soft. After cutting about 200 rods of ditch for Mr. Archibald, we moved five miles to Princeport. Some 1400 rods were dug there on two farms. The machine was then moved to Central Onslow, where we dug 700 rods. Although it was early in the season, we laid the machine up as a rather large amount of repairing would be necessary before further work could be done, and a change in the type of machine was proposed. Our season's work again demonstrated quite forcibly the value of gasoline over steam power for this type of work. The cost of transporting water and fuel is an important factor, particularly when moving the machine. Another feature of this machine, which has been improved upon since our purchase, is the method of changing the digging speed. The attachment on the more modern machine makes it possible to change without loss of time from a speed of little over two feet per minute in stony places to four or five feet where no danger of breakage exists. Still another and perhaps to us the most important change of all, is an improved type of apron tractor. We have both round and apron wheels with our machine. We are obliged to put on the round wheel whenever we move on the highway as the apron wheel will not work properly on the hard ground. Besides the loss of time in changing wheels, many small bridges will not bear the weight, while by distributing this weight, as the apron wheel does, we can cross safely. On one occasion this season, we were obliged to car the machine at Clifton to transport seven miles, resulting in both loss of time and extra expense.

Drainage Tile.

One of the reasons why more under drainage has not been done in Nova Scotia is the cost of clay tile and difficulty of obtaining same. This has led us into some investigation of concrete tile. In the fall of 1913, a hand machine was bought. The tile made with this machine was only fairly hard, but seemed to stand all right after placing in the ground. This season we bought a portable power outfit, consisting of tile machine, making from three to eight inch sizes, five and one-half horse power engine, and small rotary pump to use when sprinkling tile when curing. This outfit we have taken to the farms where the ditching machine has been used and during the season have made something over 40,000 tile, including three, four and five inch sizes. These tile seem quite satisfactory and nearly all of them have been put in the ground. For localities some distance from the railway the concrete tile may be the means of solving a very real problem for the farmer.

Yours Respectfully,

B. H. LANDELS.

Part 7—POULTRY DEPARTMENT.

Truro, N. S., December 31st., 1914.

Prof. M. Cumming,
Principal Agricultural College,
Truro, N. S.

Sir —I have the honor to submit herewith my 13th annual report as Manager of the Poultry Department.

The interest in Poultry Husbandry has continued to increase and during the year I have been unable to overtake all the demands which were made on my time for addresses and assistance in organizing co-operative poultry clubs in different parts of the Province. We hope in the near future to be able to catch up with all this work which is very much needed in parts of the Province not yet organized. The prices have been very satisfactory for all kinds of poultry products and marketing the surplus production of eggs during the spring and summer is one which will require some consideration in the very near future. During the months of April, May, and June, the production of eggs is very much in excess of the demand and consequently the prices which the farmers receive are not sufficient to enable them to compete with the dealers who have provided proper cold storage accomodation. A solution which appears reasonable and which has been advocated in different places is found in private and co-operative cold storage. This can be accomplished by farmers working the poultry and egg shipments along with the butter and cheese which is made at the creameries.

I have the pleasure of again placing on record my appreciation of the very generous manner in which the Poultry Department has been dealt with by the Federal Department of Agriculture. By the assistance of the grant received demonstration poultry houses were built in seven different parts of the province. An agreement was entered into in each case that the flocks were to be pure bred fowls and eggs would be supplied to the farmers from these flocks. This method will assist to furnish pure bred poultry in each section and will also furnish an example of the modern type of a poultry house. These demonstration houses were built at the following places:—Eden Lake, Pictou County, River Denny's, Cape Breton, North Brookfield, Queens, Meteghan, Little Brook and Commeauville, Digby County, and Kempt, Queens County. I was also enabled to provide a killing and dressing of poultry demonstration at Meadowville, Pictou County, Kempt, Caledonia, and North

Brookfield, Queens County, Bridgewater, Lunenburg County and Glace Bay, Cape Breton. Applications were received for other demonstrations but owing to other work at the College we were unable to get this work done before the end of the year. It is the intention to conduct some more of these demonstrations during the coming winter when time and opportunity will permit.

The Demonstration houses were located where from our experience most benefit would result to the farmers. In each case the demonstration houses were visited by a good number of persons and the interest in the construction was very marked. The houses were taken as a model and others were built in near neighborhoods at the same time. It is to be hoped that we will be able to continue this work in future and have others built in sections where better housing of the poultry is much needed. A model poultry house stimulates the neighborhood in which it is constructed in a remarkable manner to give better attention to their poultry.

The plan of supplying eggs for settings to the Rural Schools which was referred to in this report last year was carried out in a very satisfactory manner. One hundred and ten settings of eggs were forwarded to the school children. The breeds supplied were:—Barred Plymouth Rocks, White Wyandottes, Single Comb White and Brown Leghorns, Rhode Island Reds and Black Minorcas.

The results were in nearly all cases very satisfactory. Owing to improper handling of the eggs in transit, some settings did not reach their destination in good condition but when brought to our attention and if not too late in the season were immediately replaced. In another portion ol this report the result of this work in the district about Middle Musquodoboit is reported.

The Director of Rural Science Schools, Mr. L. A. DeWolfe and this Department intend to continue this work, and as far as our means will allow supply interested pupils of the rural schools settings from pure bred poultry.

The Nova Scotia Poultry Association held the annual meeting at the College and members were present from all the County Poultry Clubs.

The report of the Secretary was very satisfactory and showed that the poultrymen of the Province were organizing under the Act passed in May 1913. During the past year poultry shows were held at Antigonish, Sydney Mines, Glace Bay, Bridgewater, Stellarton, Kentville and Windsor. The other clubs of the Province are preparing to hold their shows during the coming months.

Judging of the fowls at all of the local shows is one of the best means of giving information to the exhibitors which enables them to select their best stock for breeders and thus make improvement. The improvement in the older organized clubs is remarkable and very little inferior poultry is seen in the coops. The larger shows require some additional assistance which I trust will be forthcoming in order that these shows may continue in the useful work they have begun. A great deal is yet to be done in the Province to assist in organizing clubs in counties where at present little or no attention is being paid to this industry.

We forwarded the blue print plans as, in the past, together with a list of material for construction. We are always pleased to receive applications for these plans which are mailed free to all who apply.

The following is a list of the number of each mailed from this Department during the past year:—

Two Pen House Plan	215
Colony House Plan	33
Trap Nest Plan	38
Dry Feed Hopper Plan	6
Brooder Coop Plan	2
	294

I addressed meetings on the subjects of Poultry raising, Marketing, etc., at the following places during the past year: Dartmouth, Pugwash Jct., Middleboro, Middle Musquodoboit, Elmsvale, Lawrencetown, Centre River, Dennys, Milford, South Side River Dennys, Iona, Christmas Island, North Brookfield, South Brookfield, Caledonia, Kempt, and East Leicester, Antigonish, Lochabor, Heatherton, Pomquet and St. Andrews. At the meetings held at Middle Musquodoboit and Pugwash Jct. I was assisted by Mr. T. A. Benson, Poultry Superintendent for Prince Edward Island. The meetings were well attended and in each case some organization work was begun which was intended to assist farmers in obtaining better prices for poultry and eggs.

The Short Courses which were held at Yarmouth, Bridgewater, Shubenacadie and Middle Musquodoboit during the early part of the year were attended.

I judged the poultry exhibits at the Exhibitions held at Port Hood, Middle Musquodoboit, Shubenacadie, Bridgewater, Yarmouth Bear River, Kentville, and Little Brook. At the Middle Musquodoboit Exhibition, a new feature was introduced which should be encouraged. The school children of the different sections in the District exhibited the poultry which they raised from the eggs supplied through the Department of Agriculture and the exhibit was a credit to the children, the teachers, and the inspector, Mr. Creighton, who gave it much personal attention. The prize lists were made up so as not to conflict with the general exhibit of poultry and it did not require any expert to note the improvement in the size, shape, color and quality of the exhibits which were the property of the school children. All who visited this exhibition noted the improved quality of the poultry and a number of the children were able to sell some of their prize poultry at a very good price. It is to be hoped that the exhibition committees of the other counties will not be slow in adopting this excellent feature for their own exhibitions.

During the first week in August I attended a convention of Provincial and Federal representatives of Poultry Departments called together by the Dominion Live Stock Commissioner for the purpose of dealing with matters affecting the development of the industry. A great many matters of importance to the industry were discussed and resolutions were adopted asking for legislation to carry out the wishes of the poultrymen in re standardizing poultry products, assisting poultry shows, etc. I also attended the annual meeting of the International Association of Instructors and Investigators in Poultry Husbandry held at McDonald College. At this Convention many very valuable papers were read and discussed by the members attending. The information gained by meeting and exchanging ideas is of great value and assistance to all engaged in the work. Representatives were present from nearly all the Agricultural Colleges and Experimental Stations in Canada, and United States.

The egg circle organized at Scotsburn has given satisfaction to the patrons. All are pleased with the result of the sales by means of the circle and in nearly all cases have netted more to members than the store prices.

The Meadowville circle has not proven quite so satisfactory owing in part to the local store competition and also to farmers in the district keeping only small flocks of fowls. During the season of small production all the eggs are consumed at home from many of these flocks and the circle has very few eggs to sell.

A circle was organized at Middle Musquodoboit which gave satisfactory results during the summer. In the fall of the year the huters made an earnest effort to buy up all the eggs in the district and paid 1 to 2 cents more than the circle price which was taken advantage of by the circle members. A good many thus dropped their membership in the circle and the collections became so small as to bring the cost to a high rate for collecting. The eggs from all circles were sold wholesale and our commission dealer informs us that the circle eggs from other Provinces which were held in storage during the fall injured the sale of the fresh gathered circle eggs.

The circle organized during the Spring at Pugwash Jct. proved satisfactory in every way. The members are all well pleased with the results and are very loyal to their manager. The success of the circles will depend very much on local conditions. It is our opinion that the poultry keepers are not numerous enough in many sections of this Province to be able, as yet to carry the egg circle work to the succes it has attained in other parts of Canada.

During the year we raised 668 chickens. Owing to the small demand which we have had for the dressed ducks during the past two years, and being in need of the room for the growing chickens we sold out our flock of breeding ducks at the end of the breeding season. We have however decided to keep a small flock of breeders for to furnish a supply of eggs for settings during the Spring. The chickens made good growth and were a very fine flock in the fall.

It has been a serious drawback and annoying to have to relate that on many different occasions we were the victims of night prowlers who often made away with some of our more valuable poultry. We succeeded in capturing the persons who were stealing our poultry and obtained a conviction and sentence which has proven a good thing for this department. This was accomplished by marking the chickens and after they were stolen we traced the birds to the hotels where they were sold. I would like to call the attention of any who have been the victims of similar persons to the present wording of the Criminal Code of Canada which does not inflict a severe penalty on those found guilty of breaking into and stealing poultry from any poultry house. I brought this matter to the attention of the convention of Poultrymen held at Ottawa and a committee was appointed to try and have a change effected.

The Simplex Brooder House which was built last year proved to be very successful and the chickens grew strong and vigorous. During the cold days of early spring it was very satisfactory to know that all the chickens were in a comfortable brooder building. The Company from whom we obtained the brooder stove supplied us with a complete and satisfactory automatic thermonstat which was of great value in reducing the amount of oil which the stove consumed. It is my intention to make a trial of a new brooder stove just on the market which uses hard coal for fuel in order to try to reduce the cost for fuel which is a handicap in this Province, when oil is the fuel used.

The chickens were all marketed as here-to-fore. We were able to spare a number of pullets from our flock but the demand was far in excess of the supply.

In conclusion I wish to acknowledge my appreciation of the painstaking and faithful manner in which Mr. Dan McInnis, my assistant carried out the work on the poultry plant. I also want to place on record my appreciation of the many evidences of interest which you have shown in the work of this Department both at the College and in the Province all of which is very satisfactory to the Provincial poultrymen. All of which is respectfully submitted.

J. P. LANDRY.

Part 8—REPORT OF THE SUPERINTENDENT OF DAIRYING.

M. Cumming, Esq.,
Secy. for Agriculture,
Truro, N. S.

Sir —I have the honor to submit this my third Annual Report in connection with the Dairy Industry for the year ending Dec., 1914.

The year might be termed one of foundation laying work to meet the expanding interest and enthusiasm that is being manifested in dairying in general, and co-operative dairying in particular, Predictions were made years ago by men in a position to know that the possibilities for Dairying in the Province were great and when the people became alive to the opportunities that were before them the industry would go ahead by leaps and bounds. The results of the past year and years seem to justify their statements, for a renewed interest appears to be shown all over the Province in the development of a better class of cows, cows that will not only pay for the food consumed but will leave a satisfactory margin of profit for the owners. This pleasing feature is especially noticeable where well-organized, well conducted co-operative creameries are in existence, As an illustration, in one creamery during the season of 1909, when the creamery ran for nine months, the highest herd average per cow was between $25.00 and $30.00, while in the same creamery for 1913, the highest average was $78.23 per cow in a herd of nine cows. This is perhaps one of the main features of co-operative manufacturing of dairy products, viz. that it stimulates an interest in the production end and the results as shown by the following table will prove that development has taken place during the past five years.

Year	No. of creameries in operation	No. new ones started	Lbs. butter made in creameries	Estimated value	Estimated per cent. increase over former year
1910	10	1	256,420	$76,669.20	50
1911	10	—	320,763	83,398.38	50
1912	12	2	470,603	130,076.17	30
1913	14	3	709,012	194,802.46	45
1914	17	3	913,273	257,600.00	30

The main feature of this development is not so much in the number of new creameries established but in the increased production of the old creameries, and in the fact that in establishing new creameries, the object kept in mind was to have them so situated as to cover the largest possible area in the most economical way and to get them so distributed over the Province as to make as few as possible accomplish the end sought, with the result that it will only require a very few more to cover practically all of the Province that is adapted to factory dairying.

The year started with the Second Annual Convention of the Dairymen held in the Agricultural College during the Short Course in January, which was a marked improvement over the first meeting held the previous year. About twice the number of men were present. The best of feeling and enthusiasm prevailed throughout. Many questions of interest were dealt with. The use of the Acidimeter in connection with the manufacture of butter and cheese was dealt with by Mr. C. W. McDougal, Supt. of Dairying in New Brunswick, with the result that a number of the creameries and one of the cheese factories adopted its use during the year. Mr. Harvey Mitchell, of the Dominion Dairy Service, dwelt on the importance of the factorymen using every effort among their patrons for a higher and more profitable milk production per cow.

A draft of Dairy Legislation was submitted as suitable to the present needs of the work and, after discussion the following Resolution was passed as Resolution No. 5: That the draft of Dairy Legislation as outlined in the discussion of the afternoon respecting legislation be approved of by this Convention. Carried. The draft was subsequently submitted as a Bill before the Legislative Assembly and was finally passed on the 14th day of May. A copy of the legislation is submitted in connection with this report.

It was also agreed that as dairymen we should unite in the encouragement and promotion of the Dairy Industry and with the above objects in view it was decided to organize the Dairymen's Association of Nova Scotia, and in future to hold Annual Conventions. The following officers were appointed who were to act as the Executive Committee, arrange for the next Convention and draft suitable Constitution and By-laws laws to be presented at that time. President D. W. Murray, Pres. Scotsburn Creamery Co., Ltd; Vice-President, R. B. McLennan, Prop. Brookfield Creamery.;Secy W. A. McKay The next Convention is arranged to be held during the Short Course in January, 1915.

The Dairy Herd Competition among the patrons of cheese factories and creameries was held again this year, extending from May 1st to Dec. 31. A small amount more money was offered in prizes. At time of writing the competition is not yet over but considerable interest is manifest and there is a larger entry list than last year.

The output of cheese and butter from the cheese factories and creameries again stands in about the same proportion as in former years, cheese showing a falling off and the amount of butter, jumping from 709,102 lbs. in 1913 to 913,273 in 1914, or an increase of 204,171 lbs. It is a matter of some concern to notice the continued falling off in the cheese business. The interest in cheesemaking is lessening yearly, with two or three exceptions in all parts of the Province. With the present high prices for cheese which are likely to continue for years to come, this branch of dairying is very remunerative and well suited to some sections and there is no doubt that in a number of sections where home dairying is now carried on exclusively and especially sections that are too small to operate a creamery successfully, a well constructed little cheese factory for the summer months would prove more profitable than the present system. This will prove most desireable when the people realize the advantages of winter dairying to a greater extent and have their cows freshen in the winter months so that home dairying can be carried on until the spring, and cheese making after that. Thus the double advantage will be gained of the highest prices for butter in winter and of the highest prices for cheese in summer for by this time the calves, having had a good start, can be fed without milk.

The output of creamery butter again shows a decided increase not only by the addition of new creameries but on the whole the old creameries show an increase of about 15% over last year. This no doubt can be partly attributed to the higher prices that prevailed for creamery butter during the year than formerly but more especially in the districts where the greatest increases have taken place, the farmers are taking a greater interest in their cows, using more improved stock, especially sires, and feeding better than formerly.

The most outstanding gains among the old creameries are again at Yarmouth and Scotsburn. The Yarmouth increase was from 169,017 lbs. in 1913 to 201,976 lbs. in 1914, with less cream taken in from outside the county, This creamery now stands second in production in the Maritime Provinces.

Scotsburn increased from 228,750 lbs. in 1913 to 274,688 in 1914, and again holds premier place in the Maritime Provinces. The success achieved in this creamery is an outstanding example to every rural district in the Province of

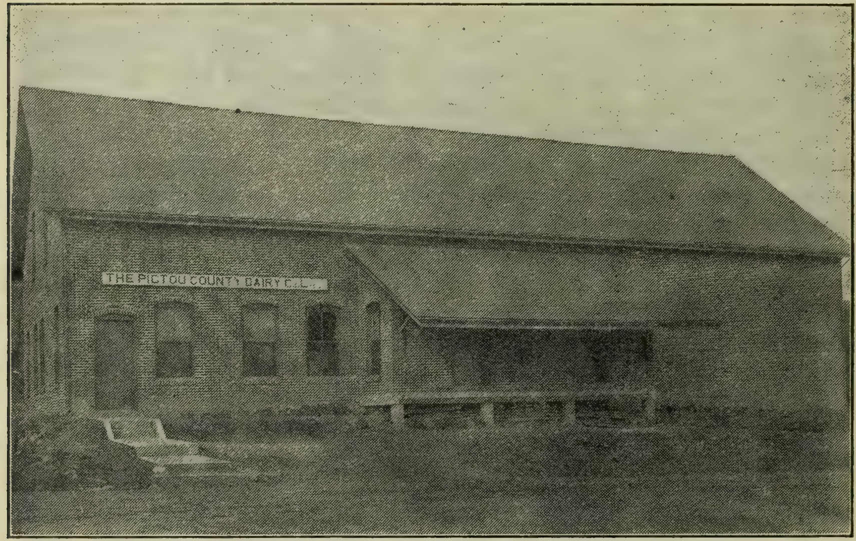
Nova Scotia of what can be done through co-operation and has been a big incentive to the development that is taking place all over the Province. The distributing of from $50,000 to $75,000 annually during the past few years in that district has brought more prosperity more contentment and a much stronger co-operative spirit with the result that a co-operative Trading Company was organized in 1913, doing a general store business and handling flour, feeds, etc. and was able from the start to do a profitable business, the first year's annual report being very satisfactory. This has meant development in many other ways; a number of vacant farms have been re-occupied, the price of farmlands has advanced. One farm that was bought for $1300.00 about 12 years ago, sold recently for around $4000.00, and very little improvement had been put on during that time in the way of buildings. This success could be repeated in many parts of the Province where up to the present, very few evidences of increasing interest are noticeable.

The three new creameries that began operations during 1913 have shown satisfactory progress during the year. These can all be termed local creameries, as all the cream or milk has to be delivered by team, the situation being too far from the railway to use it for this purpose.

The Clare Creamery in Digby County shows an increase of about 80%, over the first year, while the Meteghan creamery situated only three miles away, shows an increase of about 20%. The former is a cream gathered and the latter a whole milk creamery.

The Loch Katrine creamery in Antigonish County, although only in existence for two seasons, has already done much to arouse fresh interest in agriculture in that district. The output this year doubled that of the first year. The people are taking more interest in dairying than ever before. About 65 of the patrons are now weighing and testing their milk. They were able to run a month later this year than last and no doubt in a few years will be operating the full twelve months. I look for great development in this district and expect to see it one of the outstanding instances of what a local cream gathered creamery can accomplish.

Again this year three new companies began operations and all might be termed centralized creameries, gathering a large amount of their raw material by train and boat. As will be noticed by the detailed report the LaHave and the Pictou County Dairy Companies have both made a good start. They both have up to date plants built on the same plans, furnished by the Department here, and costing from $7000.00 to $10,500.00.



Pictou County Dairy Company, Creamery at Stellarton.

The Pictou County Dairy Company, Ltd., Stellarton, N. S., organized fall of 1913, stock subscribed to date over $13,000. This plant cost over $10,000 and is one of the most up-to-date and well equipped creamery plants in Eastern Canada. The business done during the first six months was about $12,000 and the 1st Annual Statement presented at the Annual Meeting on Feb. 26th showed the Company to be in a good financial position. It is owned and controlled entirely by farmers. The Manager sold his farm to take charge of the business. The Pres. had an average gross return per cow last year of $118.00 with a herd of 8 cows. Cost of feed $70.00 per cow. Net profit $48.00 per cow. With such practical men as these at the helm, the business is sure to be a success.

As mentioned in my last report, the Department built a Demonstration Creamery at Baddeck, Cape Breton. After one season's operation, I think this creamery has fully justified its being built. Although the output was not large the patrons have expressed themselves as well pleased with the return, and the prospects are for a much greater development during the coming year and eventually we believe we can make this a good paying proposition. Our office there was also used by the Agricultural Demonstrator, H. S. Cunningham, and we are much indebted to him for assistance given during the season in many ways, There are great possibilities for dairying in Cape Breton and when this creamery accomplishes the end sought we no doubt will see great development. Already many inquiries are being made as regards the possibilities of establishing creameries in other places. I submit a detailed financial statement of this creamery in connection with this report.

Two new creameries will begin operations next year. The Millburn Creamery Co., Ltd., at Malignant Cove, Antigonish Co., and the Bayview Creamery Company, Ltd., at Selmah Hants Co. This last Company has been brought about by a union of the Selmah and Noel creameries that have been idle for many years. The Selmah creamery has been acquired and is being fitted in an up to date manner.

My time during the first three months of the year was spent largely at instruction work in the Agricultural College The summer was spent as much as possible among the creameries, at organization work, and I held 34 public meetings, attended a patron's picnic at Scotsburn in July, and as many of the Fall Exhibitions as time would permit. The office work and correspondence has increased greatly requiring more of my time in the office yearly. With the amount of new work on hand, I found that I could not give the necessary attention to the old creameries and consequently with your permission engaged Mr. Geo. A. Clarke, from the O. A. C., Guelph, to act as my Assistant in the Inspection and Instruction Work. Mr. Clarke practically grew up in the creamery and cheese factory business, is a graduate of Guelph Dairy School and was well qualified for the position. His report for the season I submit in connection with this report.

With the development of the business and the work in sight for next year, I shall need an assistant again for the summer months at least and the time is not far distant when I shall need one during the entire year.

During the latter part of December, 1913, I went to Ottawa with Mr. Harvey Mitchell in an effort to get the Dairy Division of the Department there to do more for cow testing in the Province, with the result that we got two more men appointed to give their full time to this important part of the work, making in all now four men operating among the patrons of the following creameries; Scotsburn, River Hebert, Bass River, Glenholme Great Village, Brookfield, Stellarton and Loch Katrine and the Malagash Cheese factory, and while we appreciate very greatly the valuable work already being done by the Dairy Division at Ottawa, under the super vision of Mr. Mitchell, we trust in time to see the work carried on in connection with every creamery in the Province.

With your permission, in July I visited Boston and some other points in the New England States with a view of ascertaining the possibility of establishing a market for some of our butter there and of comparing the quality of their products with ours. While there are possibilities especially for the creameries at the western end of the Province, nothing to date has been done.

The dairy butter situation is a matter of some concern. While a certain amount of it is being manufactured economically, of a good quality and marketed in a way to secure the best returns, still a certain proportion of it is manufactured in the old way under unsanitary conditions and the quality is poor. It is sold to the country store, sometimes being stored there or in the farm cellar for a large part of the summmer and early fall, then sold getting to the consumer during the fall and winter months and in a condition many times unfit for food. The loss incurred in this way cannot be estimated in dollars and cents and no doubt this will continue just as long as the greater proportion is being manufactured on the farm.

During the year we ran a travelling dairy in two places in Guysboro County, in charge of Mr. Clark, which met with a very favorable reception as will be seen by Mr. Clark's report. I would recommend the continuance of this work but only in sections where it is asked for during the coming year. In this way much good, I think, could be accomplished.

During the month of December I prepared a bulletin on the manufacture of Dairy Products, covering buttermaking, Home Dairy Cheese, Soft Cheese, Ice Cream and some of the other products of milk that can be easily made on the farm, also a chapter on milk testing. This will serve in a sense as a text book in the Short Courses in Dairying at the Agricultural College and will be for general distribution over the Province.

All the new creameries received the usual bonus from the Department as well as some special bonuses in cases where it was thought justifiable.

While considerable development has taken place during the past few years and the past year has been the banner year to date, still in comparison with the possibilities of the Province very little is being done, especially in co-operative lines and it is unquestionable at the present time that over one half of the butter manufactured in the Province could be manufactured more economically in creameries and give the consumer a much better quality than he is getting at present. A conservative estimate places the amount of dairy butter manufactured yearly at between 10,000,000 and 12,000,000 lbs. while the creamery butter is still less than 1,000,000 lbs. When the people realize the losses sustained through the home method of manufacturing, greater progress will be made in co-operative dairying.

Again to the Federal Department of Agriculture and to you my thanks are due for the portion of the Federal Grant that was apportioned to Dairying. This was of much assistance in the work.

In the following pages will be found a detailed statement of the business done by the different creameries and cheese factories during the year.

In conclusion, I again desire to place on record my appreciation of the valuable assistance and advice you have given me during the year and also to many of the other members of the College faculty and Dept. of Agriculture and to all those through the Province who in one way or another are giving much assistance in making the Dairy Industry prosper in the Province.

All of which is respectfully submitted.

W. A. MacKAY,

Truro, Dec. 18., 1914.

REPORT OF CHEESE FACTORIES AND CREAMERIES, FROM DEC 1st 1913 TO NOV 30th 1914

County	Name of Factory	Name of Pres., Secy. or Mgr.	Name of Cheese or Buttermaker	P. O. Address	No. of Patrons	Lbs. Milk Received	Lbs. Cream Received	Lbs. of Butter Made	Lbs. of Cheese Made	Quarts Ice cream made	Value of Business Done	Value of Improve-ments Made
Annapolis	Lawrencetown	J. B. Jefferson	J. H. Hawkesworth	Lawrencetown	40	525000	52500	10500	25000	....	6600 00	200 00
Antigonish	Argyle	Geo.. Vinten	Dan Boyd	Lower South River	10	89596	....	......	8207	....	1148 98	....
	Erinville	"	Joe Reddy	" "	18	110767	....	......	10013	....	1401 82	200 00
	Glassburn	"	Tom Chisholm	" "	14	153916	....	......	14287	....	2000 18	....
	Marydale	"	Dan McDonald	" "	20	231062	....	......	21521	....	3012 94	....
	Upper South River	"	John McAdam	" "	21	150424	....	......	13875	....	1942 50	....
	South River Cry. Co., Ltd.	J. T. Keating	Alex Cameron	Loch Katrine	122	....	151855	49600	......	....	12800 00	50 00
Colchester	Brookfield Cry. Co	R. B. McLennan	Douglas Dickie	Brookfield	60	195080	106653	30649	......	882	14600 00	150 00
	Economy & Bass River	S. H. Fulton	W. C. Lewis	Little Bass River	40	226113	32523	18207	......	....	4750 00	....
	Glenholme	T. D. Blaikie	Fletcher Smith	Great Village	28	131350	41684	17359	......	....	4860 52	50 00
	Great Village	"	T. D. Blaikie	Great Village	40	484643	24683	29636	......	....	7850 00	100 00
Cumberland	Malagash	J. T. Treen	H. H. Gillis	Malagash Centre	32	448884	....	......	41250	....	5704 85	25 00
	Cum. Co-op. Cry Co. Ltd	W. A. Landels	Harry Rogers	River Hebert	56	....	120790	38885	......	2630	11332 00	25 00
Digby	Clare Creamery Co., Ltd	L. C. LeBlanc	L. C. LeBlanc	Meteghan River	140	....	87018	27335	......	....	7100 00	....
	La Sociele' De Industrie Lacture Limited	Z. Melanson	Narcisse Roberge	Meteghan	75	307864	....	16000	......	....	4050 00	....
Kings	The Acadia Dairy Co., Ltd.	A. M. Wheaton	A. M. Wheaton	Wolfville	150	....	230000	65000	......	2500	19000 00	....
	The Acadia Canning & Cry. Co. Ltd.	A. E. Smith	G. R. Toole	Kingston	20	....	50228	14224	......	....	4267 00	....
	Fairview Creamery	F. A. Illsley	F. A. Illsley	Berwick	48	....	110000	26600	......	....	7700 50	50 00
Lunenburg	The La Have Cry. Co., Ltd.	G. M. Hebb	J. D. McKenzie	Bridgewater	140	....	126759	37059	......	3623	11122 00	7000 00
Pictou	The Scotsburn Cry. Co. Ltd.	R. T. Stewart	Alvin Graham	Scotsburn	439	....	870245	274688	......	....	75000 00	1000 00
	The Pictou Co. Dairy Co Ltd	Harold Falconer	Geo. G. Campbell	Stellarton	130	....	139872	38069	......	....	11000 00	10500 00
Victoria	Baddeck Creamery	J. R. Sutherland	J. R. Sutherland	Baddeck	66	....	62935	17486	......	156	4973 29	6692 31
Yarmouth	Yarmouth Cry. Ltd.	F. E. Porter	Don Chipman	Dayton	370	....	655000	201976	......	....	55000 00	550 00
					2079	3054699	2862745	913273	134133	9791	277216 08	26392 31

Sep. 12, 1914.

W. A. MacKay, Esq.,
Dairy Superintendent.,
Truro, N. S.

Dear Sir:—I have the honor to submit my first report in connection with the dairy instruction work in the creameries and cheese factories of this Province.

My time has been spent among the creameries and cheese factories as follows: Two to five visits were made to the different creameries, these visits lasting from one to fourteen days. One week was given to instruction and sanitary inspection work among the cheese factories in Antigonish County. Two weeks were spent assisting in manufacturing cheese at Malagash, one week at lecture work in the interests of dairying in Cumberland County, and one week at Home Dairy Work in Guysboro.

The work taken up with the creameries consisted in introducing the acidimeter test, instruction as to the operation of this test and the benefits derived from its use, in assuring a more even quality of butter. A number of the creameries have made use of this test to advantage while others do not appreciate the value of operating it to assist them in keeping the quality of butter up to a standard.

General sanitary inspection work along with inspection of cold storages, testing and care of composite samples, quality of butter and methods of handling churnings were main items of inspection work.

The creameries throughout the Province generally speaking are on a good sound business basis but in many cases the butter makers lack experience, which means that careful instruction work is very necessary. The sanitary inspection and instruction work is being carried on more effectively under the present dairy legislation.

The travelling dairy work in Guysboro County was carried on with much success, the total attendance at the four meetings being 150 people. The interest shown by the people at these practical demonstrations was encouraging and leads me to believe that this work may be carried on very successfully in many sections of the Province. The work taken up at these meetings consisted of demonstrations in butter making and instruction in care of cream, milk testing, lectures on herd improvement and on milk production.

In conclusion, I wish to express many thanks to Mr. MacKay for his interest and kindness, also to the different cheese factory and creamery men for their many kindnesses extended to me during my different visits to them.

All of which is respectfully submitted.

G. A. CLARK.

CHAPTER 3 ACTS 1914.

An Act for the Encouragement of Dairying.

Be it enacted by the Governor, Council, and Assembly, as follows:—

Short Title.

1 This Act may be cited as "The Dairymen's Act."

Interpretation.

2. In the Act, unless the context otherwise requires,

(a) the expression "Secretary" means the Secretary for Agriculture.

(b) the expression "Superintendent" means the Superintendent of Dairying;

(c) the expression "Creamery" means any place to which is brought the milk and cream from the cows of five or more persons for the purpose of being manufactured into butter for public sale:

(d) the expression "Cheese Factory" means any place to which is brought the milk from the herds of five or more persons for the purpose of being manufactured into cheese for public sale;

(e) the expression "Patron" means any person bringing or supplying cream or milk to any creamery or cheese factory,;

(f) the expression "Company" means an incorporated company;

(g) the expression "The Act" means "The Nova Scotia Companies' Act."

3. The Governor-in-Council may, for the purpose of encouraging dairying in the Province of Nova Scotia, expend annually a sum not exceeding five thousand dollars—

(a) in assisting, upon the recommendation of the Secretary of Agriculture, any creamery established or proposed to be established by any person who gives security satisfactory to said Secretary that he will annually for the space of five years manufacture in said creamery not less than twenty thousand pounds of butter of good quality, or forty thousand pounds of cheese of good quality or the equivalent in pounds of butter and cheese of good quality, and will during such period conduct such creamery according to the regulations made and approved by the Governor-in-Council;

(b) in aiding and encouraging in such manner and by such means as may be recommended by the Secretary of Agriculture and approved by the Governor-in-Council, winter dairying within the said province;

(c) in paying the salary and expenses of one or more competent instructors and sending him or them in such districts of the said province as the Secretary of Agriculture from time to time recommends, for the purpose of giving instruction, whenever likely to be beneficial, in butter making, and in providing such portable dairying plant and machinery as may be serviceable in enabling instructor or instructors to properly illustrate the subject by object lessons. 1912, c. 20 s. 27.

4. The Governor-in-Council may expend an amount not exceeding fifteen thousand dollars to purchase a site for and to build and equip with the necessary plant and machinery, a Demonstration Creamery or Cheese Factory, at such places and on such conditions as may be recommended by the Superintendent and Secretary and may appropriate the money necessary to conduct such creamery for a period of years.

5. Any three or more persons who desire to associate themselves together for the purpose of manufacturing butter or cheese or both, or providing cold storage for the safe keeping of the same may do so under the Nova Scotia Companies' Act.

6. No company so incorporated under the Nova Scotia Companies' Act, association, firm or individual shall erect any buildings for the purpose of manufacturing butter or cheese until the site, plans and specifications of such building or buildings have been approved of by the Superintendent.

7. The Superintendent may, with the consent of any company incorporated under the provisions of the Act, undertake and continue in whole or in part the management and operation of the business of any such Company upon such conditions and for such period as the Governor-in-Council may deem expedient.

8. The buildings and premises of every creamery and cheese factory shall be kept in a sanitary condition, satisfactory to the Superintendent appointed under the provisions of chapter 12, section 1, Statutes of 1913.

9. Any Council or municipality in the province may aid in the establishment in such municipality of a creamery or cheese factory to the extent of providing and paying for the land and building requisite for the purpose. 1912, c 20 s. 28.

10. All materials entered into the manufacture of butter and cheese shall be clean and wholesome and the methods employed in manufacturing shall be sanitary.

11. The methods of handling and caring for milk, cream, and the dairy utensils used by patron shall be clean and sanitary and satisfactory to the Superintendent.

12. When the butter fat contents of milk supplied to a creamery or cheese factory is determined by the Babcock test, the measuring pipette shall have a marked capacity of 17.6 cubic centimeters, officially stamped.

13. The butter fat content of cream supplied to a creamery shall be determined by the Babcock test, the standard sample of cream taken for testing shall weigh 18 grammes.

14. (1) When a composite test is made to determine, by the Babcock test, the percentage of butter fat contained in milk or cream supplied to a creamery or cheese factory by any patron, a sample shall be taken from each weighing, and the proportion which such sample bears to the weight of the milk or cream from which it is taken shall be maintained in the taking of all other samples entering into such composite test.

(2) The samples of milk and cream collected for a composite test from each patron shall be kept in a cool place, in a separate tightly stoppered glass bottle or jar, plainly marked with the patron's name or number.

(3) A record shall be kept of all tests, composite or otherwise, made to determine the butter fat contents of milk or cream, and any patron or any inspector appointed under the Act, shall have the right to examine such record at all reasonable hours.

15. (1) The owner, operator, manager, or other person in charge of a creamery or cheese factory shall keep a record of the amounts of milk or cream received each day from each patron and the disposition made thereof; also of the weight of all butter and cheese manufactured daily and how disposed of.

(2) Any patron or any inspector appointed under this Act shall have the right to examine such records at all reasonable hours.

16. The owner, operator, manager or other person in charge of any creamery shall make and deliver with every payment to each patron a statement showing among other details:—

(a) the period which each payment covers;

(b) the quantity of milk or cream supplied by him, or her, during that period;

(c) the butter fat contents in pounds of such milk and cream;

(d) the quantity of butter manufactured therefrom;

(e) the basis and rate of payment per pound of butter fat or of manufactured butter as the case may be.

17. The owner, operator, manager or other person in charge of any cheese factory shall make and deliver with every payment to each patron a statement showing among other details—

(a) the period which such payment covers;

(b) the quantity in pounds of milk supplied by him, or her, during such period;

(c) if payment is based on the butter fat value of such milk, then the butter fat contents in pounds must be shown;

(d) the basis and rate of payment per pound of butter fat or per hundred pounds of milk as the case may be.

18. The owner, operator, manager or other person in charge of any creamery shall make such statistical returns in such form and at such time as the Superintendent may require.

19. The Superintendent may appoint and define the duties of dairy inspectors to enforce the provisions of this

20. Any dairy inspector appointed under the provisions of this Act shall be at all reasonable hours have free acess and admission to all creameries and cheese factories and everything contained therein and on the premises, and also to the buildings and premises used for dairy purposes by any patron.

21. The owner, operator, manager, or other person in charge of any creamery, who refuses admission or who offers any obstruction or fails to faciliate the work of inspection, who over reads or under reads the Babcock test, or who violates any of the provisions of this Act shall, upon summary conviction thereof before any justice of the peace, be liable to a penalty of not less than $5.00 and not more than $100.00

22. No justice of the peace having any pecuniary interest in a creamery or cheese factory, as aforesaid, shall hear or determine any complaint under this Act.

23. On or before the first day of May, 1915, the owner, operator, manager, or other person in charge of every cheese factory and creamery, shall register in the office of the Superintendent, upon forms to be supplied by him, the name, location and nature of the business of such creamery or cheese factory and such other information as to ownership and operation as the Superintendent requires.

(2) A record of all such registration shall be kept by the Superintendent and shall be open to public inspection at all reasonable hours.

24 On and after the first day of May, 1915, no owner, operator, manager or other person in charge, not registered as provided in the next preceding section., shall conduct, operate or carry on the business of any creamery or cheese factory without permission in writing from the Superintendent so to do, and such permission may be granted only upon the report of a dairy inspector.

(2) Refusal to grant such permission may be based upon lack of proper equipment or upon unsanitary conditions,

(3) An appeal from the decision of the Superintendent may be made to the Governor-in-Council.

25. Upon the report of any dairy inspector that a creamery or cheese factory is not in a sanitary condition or that the methods of manufacture are unsanitary, the Superintendent may order the owner, operator or manager, or other person in charge thereof, to close the same forthwith, and it shall be kept closed until the dairy inspector reports that the sanitary condition and methods are satisfactory.

26 The Governor-in-Council may make such regulations as are required for the proper carrying out of the objects of this Act, which shall have the full force and effect of law. 1912, C. 20. s. 29.

27. Sections 27, 28 and 29 of Chapter 20 of the Acts of 1912 are repealed.

W. A. Mac Kay,
Dairy Supt., Truro, N. S.

Sir:—I submit the following report as Manager of the Baddeck Creamery during the past season.

Owing to the backward nature of the season in Cape Breton we were not able to do much until the first of June, as the farmers of the vicinity depend on the grass almost entirely for producing milk.

Considering the fact that this was the first season the creamery was in operation, the quality of the cream received was fairly good, although the patrons allowed their cream to become over ripe in the warm weather due perhaps to not having proper facilities for taking care of it.

The business was something new in Cape Breton, the methods of operation not being understood or studied by many. Several coupled it with the cheese factories and whole milk creameries that once were in operation in the Island and consequently looked on it with a good deal of scepticism and held back from patronizing it until it was proven how it would turn out or until they saw how their neighbors did and many that agreed to give it a trial for one reason or another did not get started, but the output was very encouraging for a start—making over 17,000 lbs. of butter during the season, which in comparison with the demonstration creamery that was established in Scotsburn was a greater output than they had there after eight years of operation.

The opportunities at Baddeck are just as good and as the business is more thoroughly understood, we may look for the output to increase very greatly.

All the butter was marketed in Sydney for a good price although not as good as if we could guarantee a supply for the whole year.

There is great need of encouraging the production end of the creamery. Farmers who now have three or four cows, could easily keep eight or ten in the dairy herd, provided sufficient interest was aroused. The average production per cow is also very low. The common practice in too many cases has been to have the cows freshen in the spring and go dry again in the early fall. If we can encourage winter dairying and the production of milk throughout the whole year, it will mean a better price and market for the summer as well as the winter months.

I did any cow testing the patrons wanted done during the season free of charge to them and would recommend that this be carried on in future.

The creamery takes in such an extensive country that it is difficult to tell what its future will be when it is developed. The facilities for shipping are good for the patrons, the "Marion" calling at all points on the Bras d'Or Lake between Sydney and Whycocomagh on each of her return trips taking in easily 200 farms on either side of Baddeck. The railway gives equal opportunities also. The creamery pays the same for cream at all shipping points within 40 miles of Iona Station thence to Baddeck via S. S. Bluehill.

The prospects for the coming season are very encouraging 90% of the patrons, who have sent cream during the past season, are entirely satisfied and there is every evidence of at least doubling the output next season.

In conclusion I wish to thank the people in the vicinity of the creamery for their many kindnesses and the assistance given me in my work, and trust that the co-operation between the Manager and patron may continue to make the Baddeck Creamery an unqualified success.

J. R. SUTHERLAND.
Baddeck.

Nov. 13, 1914.

Badeck Creamery.

Capital Account.

Cost of Plant and Equipment to date	$6180.31
Outstanding Bills not paid	512.00
	$6692.37
Less	
Saleable goods on hand	80.86
	$6611.45

CURRENT ACCOUNT.

Receipts

Dept. Agriculture, Truro	$ 764.93
Ehrhardt Bros, butter	2361.67
Smith & Proctor, butter	664.99
M. R. Goldie, Butter, Buttermilk and cream	297.29
Morrison & McInnis, butter	203.60
S. S. Marion, butter	79.73
MacKay & MacAskill, butter	90.01
McLeod & Co, butter, cream & B'milk	44.60
M. G. McLeod, butter	72.96
Cash Sales butter	308.00
" B'milk	37.96
" Cream	163.74
" Ice Cream	36.05
Small Sales butter, B'milk & Cream	358.46
Sale of Sugar	11.00
Incidentals	14.80
Mrs. Dunlap	38.98
Patrons for Butter, cans, forks, etc	435.05
	$5983.82
Receipts less than expenditure	70.92
	$6054.74

Expenditures.

D. C. McNeil, supplies	$ 11.50
J. R. Sutherland, salary	332.67
J. R. Sutherland, expenses	75.35
J. Carson & Sons, boxes	51.00
A. S. McDonald, coal	56.20
Trucking	12.05
F. M. McRae, Supplies & Insurance	73.18
Crockett Bros, cans, pails, etc.	295.19
DeLaval Dairy Supply Co.	171.24
Ben McAskill, salary	135.42
Incidentals	16.50
Telephone	9.75
Dillon & Spillet Supplies	14.00
Freight	90.80
W. O. Drummond, Ice Cream Supplies	16.51
Refunded to Dept.	250.00
I. Matheson & Co	2.80
Printing	48.20
C Richardson & Co., Supplies	9.75
MacKay & MacAskill, Supplies	10.86
P. L McFarlane inspecting storing ice	12.00
Patrons for Cream Cash	3934.72
Patrons Butter Cans, Forks, etc	435.05
	$6054.74

Part 9—REPORT OF THE CHEMIST.

Principal M. Cumming,
Secretary for Agriculture.

Sir:—The following report of the work of the Department of Chemistry for 1914 is respectfully submitted.

It deals with (1) routine work in sections I, II and III.

(2) Soil investigations, with a special reference to the use of lime for Nova Scotia soils in section IV.

Since Aug. 1, 1914 my time has been spent, (1) in teaching the regular classes. (2) in reviewing the literature of Agricultural chemistry and making plans for the expansion of the department along lines helpful to the practical man.

(3) In analyzing miscellaneous material as fodders, water, etc., sent to the laboratory. (4) In continuing an investigation of the soil of Nova Scotia begun six years ago, a preliminary statement of which was given in last year's report, and in starting some field and greenhouse experiments.

It is proposed to develop this department along these four lines concerning each of which a few comments will constitute my report.

Section I.

Since the Agricultural College was organized in 1905 I have instructed the classes in General and Agricultural Chemistry and Soil Physics, in addition to my regular work as instructor in the Normal College. As the classes in both institutions increased owing to growing attendance, demanded more desk room and supervision this work was carried on under difficulties; at one time last term, nearly 400 students were provided with apparatus for individual laboratory work; with the crowded laboratory and one part-time assistant only fairly satisfactory work could be accomplished. The first step towards better instruction was taken when, on August 1, 1914, I was relieved of the Normal College work so as to devote all my time to this department.

For good results in laboratory work a student should be able to work there whenever his time permits; the distance of the present laboratory from the Agricultural College and the fact that Normal students are using the room tend to prevent Agricultural students from getting the best practice; the second step towards getting better instruction will be made when the department is housed in the new Science building.

Chemistry, even though it be made practical, is one of the difficult subjects for our pupils, many of whom have been out of school for some years. Since this subject is fundamental for the clear understanding of the lectures in general Agriculture I would recommend that a special optional course in Chemistry for Juniors be opened about Oct. 15th so that such students may have a chance to get a grounding before the regular course begins. Such a course will appeal to the man who has had much practical farm experience, but has not had school advantages.

Section II.

Previous to Aug. 1, while teaching in both institutions, little time was afforded for keeping in touch with the large amount of valuable information being published by the Agricultural Experimental Stations; every country the world over has its corps of investigators along chemical lines; it is needless to say that we should use their findings, adapt them by experiment to our own province and interpret them in as practical a way as possible to the man on the farm.

Section III.

So far, for several reasons, it has been impossible to encourage individuals to send in material for analysis; it should be understood that Chemical analyses require much time and expense, that effort might be wasted in the analysis of material which any person casually picks up. A case occured where a sample of water was submitted in a strong smelling patent medicine bottle with the question—"Is this water all right?" Such samples are of no value.

The Department of Inland Revenue, Ottawa, analyzes commercial fertilizers, insecticides, fodders, etc., which are on the market, so this laboratory will not undertake this work. It will assist in the analysis of home mixed fertilizers, farm water supplies and aid in any investigation that anyone may attempt. It is the farmer's work to transfer the elements of the soil to the plant, thence to the animal. Chemical analysis is of service in showing first whether the proper elements are in the soil in sufficient amount, secondly whether they are in the fodder in proper proportion to supply the bone and tissue for the animal. The individual farmer may aid in solving many questions upon which investigators are laboring. It is hoped that this department may be able to suggest and cooperate along some such lines of work.

The following materials sent in have been given complete analysis:—

6 soils for Horticultural department of the college.
5 fodders for farm department of the college.
6 marls.
2 ashes.
1 sea weed.
1 lime.
3 waters.

Section IV.

Report of soil work.

The conclusion given in last year's report, based on the analysis of 88 samples from various parts of the Province were, marked deficiency in lime, total and available, the relatively small quantity of phosphorus and nitrogen and the large quantity of total potash which our soils contain.

Emphasis was put on the very general acid conditions of our soils.

Since last February 60 samples from various parts of Hants County, from areas between Kentville and Middleton have been taken, of these 38 have been analyzed and the results recorded in Tables I, II and III; the acid condition of these soils and the analysis give further evidence to justify last year's conclusions.

There is no question concerning soil fertility that is being investigated more generally than that of soil acidity and its correction. An acid soil may result from the basic elements as potash, lime, etc, being used up by the plants or being leached from the soil faster than the acid constituents; or by the decay of organic matter just as apple juice becomes sour in vinegar or it may become acid by the continued use of some fertilizer as acid phosphate or sulphate of Ammonia which tends to make a soil acid.

The normal soil is neutral, or nearly so, to which condition most plants have accustomed themselves; some plants will thrive best where there is free acid, others do best with an excess of free base; the element in nature which seems most suited to change the acid condition of the soil is lime. If a soil has enough lime, that is if acidity is lacking, such plants as clover, alfalfa, beets and scab of potatoes will flourish, if not, white daisy, red-top, probably potatoes will flourish. A glance over many of our fields in June will suggest the need of something to correct the acid soil.

Kansas Bulletin 199 says:—"The element which has suffered the greatest loss in soil formation is calcium, a part of lime. In the eastern humid section of the United States where limestone is one of the prevailing rocks in soil formation, soils are deficient in lime, while in the west where igneous rocks are the prevailing ones the soils are well stocked with lime. Lime, the commonest compound containing calcium) leaches out of the soil faster than any other element. The average of Calcium in 26 limestone soils of Kansas was .75% while the average of 117 samples of all kinds of soils from the same state was .58%; the 38 samples reported in Tables I, II, and III average .28% lime, an amount too low for a good soil.

Bulletin 113 Pennsylvania says, in speaking of the soil of its fertilizer plats studied for thirty years, "It will be recalled that this limestone soil has lost most of its lime, since it now contains but .3 per cent soluble in strong acid and of this small percentage very little probably is present as the carbonate."

That liming soil is necessary in many cases is indicated by the fact that the Chinese, Romans and early English applied lime quite extensively; Dr. Wheeler an authority on liming has said; "A study of the history of the practice of liming in England and the United States shows that there have been periods when the practice became quite common, owing to the fact that as soon as the benefits from liming are noticed in a given locality it becomes general; and the tendency is to carry it to excess, and, in consequence of its beneficial influence lasting 10 or 12 years, a successive period of disuse naturally follows."

Lime is not a fertilizer but a substance which indirectly puts the soil in a better condition for plant growth; a soda tablet for the human stomach is not a food but a corrective of certain unnatural conditions; just so with lime in most cases. Bulletin 279 Ohio says. "On soils deficient in lime it is as necessary to make good this deficiency as it may be to make good that of nitrogen, phosphorus or potassium. Lime does not take the place of other fertilizing elements but only accomplishes its full effect when used in connection with liberal manuring or fertilizing."

Director Thorne of Ohio says in Circular 79; "When the land begins to need lime it is a waste of time, energy and money to continue cultivating it until this need is supplied, for the economical use of every other fertilizing material, including manure, depends upon the lime supply. If that is deficient everything else must fall short of its possible attainment".

The supply of organic matter in the soils studied is too low.

It has been said that the three props of soil fertility are “intelligent use of barnyard manure; (2) maintaining a supply of humus by proper crop rotation. (3) thorough tillage.

Analysis of our soils indicates that the supply of humus is deficient; the following table from Missouri experiment station report shows the effect of increased organic matter in the soil.

	1905
Corn grown continuously 17 years without manure	11.8 bus. per acre
Rotation Corn, wheat, clover, no manure	50.7 bus. per acre
Rotation corn, wheat, clover and manure	77.6 bus. per acre.

A low supply of organic matter usually indicates a low nitrogen supply, so that maintaining the amount of organic matter means that the nitrogen supply is preserved.

The legumes as clovers, etc. get two thirds of their nitrogen from the air and one third from the soil; about two thirds of the nitrogen of the plant is in the tops, the rest in the roots, so that removing the clover; hay does not increase the nitrogen content of the soil; only by feeding the crop and returning the manure or by ploughing under the crop does the soil get the benefit of the extra nitrogen taken from the air. One of the problems for the Agriculturist of Nova Scotia is to grow the legumes more successfully. Bulletin 178 Kentucky says; “The numerous attempts to grow alfalfa in Kentucky have more often resulted in failure than in success. The crop is profitably grown under all climatic conditions found in the United States and is found thriving in all sections of Kentucky. It is therefore evident that the many failures in this state are not due to climatic conditions but to soil conditions.”

All authorities agree that one of the soil necessities for the growth of legumes, red clover, peas, beans, alfalfa, etc. is a good supply of lime especially the carbonate of lime or limestone.

Some experiments with ground limestone have been tried in Nova Scotia with little or no benefit reported on the first year's crops. Plots on the College Farm treated with limestone in the spring of 1914 showed a better catch of clover in November than those without; since limestone is slow in its action it is too soon to draw any conclusions from these experiments. A study of the results of long continued experiments, with limestone in many states and countries, of the amounts of lime and organic matter present in 104 samples of Nova Scotia soils analyzed, suggest that some extended experiment should be carried on to demonstrate whether or not the climate of Nova Scotia debars us from getting much more benefit from the legumes, to what extent limestone will aid the fertilizers in use, as barn yard manure, acid phosphate etc. It will be the aim of this department to co-operate with farmers who wish to devote some area to certain definite rotations with lime or limestone and fertilizers.

It must be remembered that the most ardent advocates of the use of lime in some form includes Rothamstead Station, England, where experiments have been conducted for 50 years, Pennsylvania Exp. Sta. for 30 years, Ohio Exp. Sta. for 20 years. Virginia, Illinois, Minnesota, in fact, nearly all the American States north and south are, in proportion to the thoroughness of their test, in favor of its rational use.

With the present price of lime the farmer says it is impossible to enter into any scheme for improving his land by its use. In Nova Scotia there are several forms of lime which may be used for Agricultural purposes.

Natural

Marl
Gypsum

Manufactured.

Ground limestone.
Burnt lime.
Slaked lime.
Slaked lime.
Air slaked lime.
Wood ashes.
Basic slag.

The essential constituent of all these is CaO, lime or calcium oxide; it is not found in nature but is prepared from limestone CaO, CO_2 by driving out by means of heat the CO_2 carbon dioxide; it is the strongest form of lime, quickly destroys soil acids but tends to rapidly use up organic matter; it is known as *burnt lime*; 100 lbs. of limestone is equal to 56 lbs. of burnt lime.

When water is put on burnt lime or when it is exposed to moist air it joins the water making *slaked lime* CaO, H_2O; 56 lbs. of burnt lime makes 74 lbs. of slaked lime; it is less caustic than the quick lime but the 74 lbs. of it will do as good work in the soil as the 56 lbs. of lime.

Burnt lime, exposed to the air for some time takes up carbondioxide again, and comes back to *air slaked lime* $CaO. CO_2$, the same composition as limestone; 56 lbs of burnt lime will give from 74 to 100 lbs of air slaked lime, depending upon the amount of moisture and carbon dioxide absorbed from the air.

This is what probably happens to most of the burnt lime put on the soil; limestone is a milder form of lime, slower in its action, but will neutralize the acid and perform the other functions of lime.

If a soil needs phosphoric acid as well as lime basic slag is found to do much good partly because it contains from two to seven and one-half per cent of free lime.

If the caustic lime changes in the soil to the slaked, mild lime why not use limestone itself? The question of transportation some distance gives the lime the advantage but with so many limestone deposits in various parts of the Province transportation charges on either lime or limestone should be small.

Ground limestone is now on the market and, when finely powdered is probably the most serviceable form in which to apply lime; the acid of the soil drives out the carbondioxide leaving the basic lime to join the acid and perhaps carry it out of the soil.

Good wood ashes have about 30% lime usually present as the carbonate.

At several places in the Eastern part of the Province there are deposits of finely broken up calcium carbonate with clay and sand giving as high as 94% of pure limestone; this material known as marl is in such a finely powdered condition that it may be considered of much value especially to the farmer in the vicinity of these deposits.

Gypsum is lime CaO joined to sulphuric acid, SO_3; it will give CaO to the soil but cannot correct acidity since the SO_3 does not go off into the air as CO_2 of limestone does, but remains in the soil to increase the acidity..

At present burnt, St. John lime for building purposes may be obtained in quantities in Truro for about $12.00 per ton. Ground limestone is about $4 per ton f.o.b. Sydney; This product is 91.6 pure $Ca\,CO_3$, and in *lime value* 2 tons of it are equal about one ton of St. John burnt lime.

There has been no demand for Agricultural lime hence there is no special effort made to provide a supply; should a large demand arise, the many limestone deposits would be made use of by different parties so that the price, no doubt, would fall below $4; it is hoped, after further investigation, to give in a future report more complete information regarding the supply and cost.

The following table gives the chemical and mechanical analysis of 3 samples of limestone.

Chemical.

	I Sydney ground limestone	II Marl, Williams Point, Antigonish County	III Marl South River, Ant. Co.
Moisture	.072	.24	.66
Organic	.97	.49	1.2
Insoluble	6.49	5.34	6.14
Ca CO3	91.6	93.4	91.4
Iron, Magnesia, etc.	.8	.4	.5
	99.932	99.87	99.90

Mechanical.

Particles	I%	II%	III%
less than $\frac{1}{50}$ in. diameter	25.25	33.	73.8
between $\frac{1}{50}$ and $\frac{1}{25}$ diam	14.86	15.42	8.03
Between $\frac{1}{25}$ and $\frac{1}{12}$ diam	30.60	21.37	13.3
over .. in. diameter	29.26	30.2	4.85
	99.97	99.99	99.98

Pennsylvania Exp. Sta. Bulletin 127 says:—"For soil amendment the limestone must be reduced to a fine powder. Present information indicates that the fineness of the crushed limestone should be at least $\frac{1}{60}$ of an inch in diameter if economical, *immediate* return is desired.".

Samples I and II containing larger percentages of the coarse material will remain in the soil longer than sample III, and might be applied in larger quantities at one time; the finer the material the oftener and smaller the application.

Lime in any form may be applied at any convenient time of the year, except that the burnt lime on account of its caustic action should be well mixed with the soil, not used at seeding time or with a fertilizer containing ammonia, or soluble phosphoric acid; in any form, it should be put under the surface as soon as possible by harrowing, cultivation, etc. so that it may come in contact with every soil particle.

On an average from one to one and a half tons of quick lime, or two to four tons of ground limestone per acre every six years have been found to suit the average soil best; the heavy clay soils profit most by heavier applications of burnt lime, while the light sandy soils are benefited by the milder ground limestone: as high as 10 tons of ground limestone per acre have been profitably applied; on the other hand an excess of lime may hurt the soil texture and thereby decrease the fertility.

In case reference be made to last year's report on page 116 exchange the figures of columns 12 and 13.

Any one who wishes to investigate the question of the acidity of his soil, its need of lime or have any material such as was referred to earlier in this report, analyzed, please write this department for directions regarding getting and sending specimens or, if necessary, have the chemist visit your locality.

TABLE I

	a	b	c	d	e	f	6a	7a	8a	9a	P.	P2
Nitrogen	.17	.61	.193	.4	.19	.21	.156	.044	.11	.044	.15	.13
Phosphoric Acid	.16	.32	.1	.16	.1	.1	.07	.13	.13	.13	.22	.11
Potash	.285	.19	.27	.45	.22	.33	.24	.385	.173	.21	.22	.31
Lime	.4	.7	.25	.5	.4	.5	.2	.3	.35	.3	.40	.05
Magnesia	.54	.68	.51	.86	.4	.76	.43	.54	.4	.29	.26	.31
Water	2.25	6.65	1.75	4.6	1.85	2.6	2.3	2.05	2.2	1.75	1.65	1.70
Organic or Volatile	6.25	31.05	5.8	14.65	6.05	5.4	5.35	2.75	3.8	4.7	6.95	4.30
Sibea Insoluble	81.71	47.25	84.15	65.72	85.37	80.	85.57	86.57	88.36	86.62	84.11	86.06
Soda Na_2O	.08	.2	.11	.38	.14	.31	.26	.1	.09	.14	.01	.16
Alumina and Iron Oxide Fe_2O_3	7.	11.3	6.3	12.2	6.2	9.2	5.8	6.7	5.1	6.3	6.45	7.50
Sulphuric Acid So_3	.257	.17	.12	.17	.24	.17	.07	.09	.05	.15	.08	.07
Totals	98.93	98.51	99.36	99.69	100.97	99.37	100.29	99.615	100.65	100.59	100.35	100.57

EXPLANATION TABLE I.

a From carboniferous limestone; farm of Thos. Gorman, Kennetcook Corner; underlying rock limestone, 2 years in oats, good yield; three years previous in hay.

b Devonian: Farm of H. T. O'Brien, Noel; meadow on clay subsoil, underdrained, limed some years ago: good stand of oats; 20 loads of stable manure per acre.

c Triassic: farm of Andrew Densmore: new land; no fertilizer; oats, good crop.

d J. McCulloch, Noel Road: carboniferous limestone; heavy subsoil: meadow land; 1½ tons hay per acre: no fertilizer for 40 years.

e H. T. O'Brien, Noel: new land—Devonian: not cultivated.

f Devonian Douglas Hines farm, Noel; worn out field; slaty rock, 1 foot from surface.

6a, 8a, P surface soil, from Plumdale farm, Truro; Triassic soil, quite acid.

7a, 9a, P2 subsoil from same farm; 18 in. from surface; very acid.

TABLE II.

	6	7	10	11	V1	V2	V3	V4	V5	V6	V7	V8
Nitrogen.........	.18	.24	.17	.177	.148	.063	.0	.119	.119	.175	.164	.12
Phosphoric Acid...	.1	.16	.11	.19	.06	.1	.13	.19	.13	.14	.064	.13
Potash...........	.173	.18	.21	.21	.155	.145	.29	.17	.26	.20	.38	.193
Lime............	.3	.2	.2	.4	.3	.18	1.8	.25	.15	.18	.1	.2
Magnesia.........	.58	.72	.215	.32	.58	.68	.504	.86	1.22	.97	.9	.83
Water............	2.10	3.1	1.45	1.55	2.75	1.35	4.	1.65	4.85	4.6	2.35	3.35
Organic or Volatile.	5.15	4.4	5.5	4.75	5.5	3.15	5.3	4.4	5.95	4.4	6.2	6.95
Sibea, Insoluble...	84.87	85.49	87.6	87.82	85.46	91.06	75.73	88.4	76.22	78.83	82.27	78.75
Soda Na $_2$O.......	.2	.09	.06	.14	.265	.32	.09	.05	.63	.6	.18	.08
Alumina.........	6.2	5.7	5.1	5.1	5.1	2.8	13.1	4.	10.50	9.72	7.7	9.8
Iron Oxide Fe $_2$O$_3$.												
Sulphuric Acid So $_3$	.06	.14	.09	.12	.07	.05	.04	.12	.07	.08	.12	.08
	99.73	100.18	100.53	100.60	100.24	99.83	100.18	100.09	99.98	99.72	100.26	100.36

EXPLANATION TABLE II.

6, 7, 10, 11 College Farm Truro+Ground Limestone.

6 Composite sample from plot with 4 ground limestone per acre first 6 inches.

7 Composite sample from limed plot 1st 3 in.

10 Composite sample from limed plot 1st, 3 in.

11 Composite sample from limed plot 2nd, 3 in.

V1, V2, V3, V4. Farm of Senator Ross, Middleton, Annapolis Co.

VI A typical meadow, sandy soil.

V1 A typical meadow sandy soil; fertilizer nitrate of soda 150 lbs., muriate of potash, 250 lbs, slag 700 lbs, per acre.

V2 A poor sandy soil.

V3 A clayey subsoil.

V4 Old orchard; good clover; 3-4 ton lime 4 years ago.

V5 New land, just ploughed, no fertilizer; farm of Ray Clarke Kinsman, Kings Co., foot of North Mt.

V6 Farm of A. S. Banks, Berwick; Triassic area, meadow about centre of Valley, near head of Cornwallis River; sandy subsoil; 4 years ago 1-4 ton hay per acre; ploughed 100 lbs, nitrate, 100 muriate per acre, now good yield.

V7 Jesse H. Clarke's Farm, Somerset, King's Co; pasture land, old field.

V8 S. B. Chute's new orchard on South Mountain, near Morristown; Devonian and Silurian area.

TABLE III.

	1	2	4	5	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10
Nitrogen.........	.16	.16	.10	.18	.17	.10	.25	.15	.25	.11	.16	.10	.16	.03
Phosphoric Acid ..	.06	.05	.01	.04	.06	.12	.30	.15	.79	.15	.15	.06	.30	.60
Potash...........	.12	.20	.22	.23	.29	.06	.26	.06	.77	.13	.24	.14	.21	.19
Lime.............	.24	.32	.30	.25	.10	.025	.125	.3	.50	.10	.10	.15	.50	.35
Magnesia.........	.18	.21	.19	.19	.20	.17	.17	.09	.65	.06	.18	.04	.09	.31
Water............	1.96	2.01	1.77	1.87	1.50	.77	2.32	1.40	3.50	1.60	2.40	1.3	3.05	6.1
Organic Volatile...	5.83	7.49	5.80	5.81	4.70	3.63	10.58	6.6	9.35	4.30	7.50	3.15	7.10	8.30
Silica Insoluble....	84.05	84.17	85.27	85.26	86.83	92.07	74.60	87.54	73.71	89.03	80.88	93.43	83.53	70.13
Soda Na_2O.......	.08	.10	.12	.15	.11	.11	.08	.12	.81	.10	.10	.07	.46	.63
Alumina..........									6.17	2.63	4.60	1.14	4.11	6.63
	7.54	6.00	5.46	5.58	6.47	3.45	10.45	4.00						
Iron Oxide Fe_2O_3.									4.93	1.87	3.40	.51	1.39	5.62
Sulphuric acid So_3.	.12	.10	.06	.06	.051	.068	.06	.08	.68	.50	.21	.35	.25	.85
Total........	100.18	100.65	99.2	99.44	100.31	100.47	98.94	100.20	101.46	100.47	99.76	100.34	100.99	99.71

EXPLANATION TABLE III.

1	Limed field on College Farm, Truro.
2	Field adjacent to 1, in turnips, *no lime*.
4	Lime.
5	No lime.
Z1	Farm of P. Innes, Coldbrook, King's Co; Sandy orchard, surface 10 in.
Z2	Run out field east of railway at Coldbrook Station, sour, almost bare of vegetation in places.
Z3	Berwick camp ground soil, typical of much of the virgin orchard land in that part of the Valley.
Z4	Virgin land, Exp. farm, Kentville, type of soil in that vicinity.
Z5	Marsh, belonging to the farm of Z4.
Z6	P. Innis, Coldbrook, 10 inches below the upper 6 in.
Z7	Worn out field from farm of Wm. Webb, Westchester, Cumberland Co.
Z8	Typical valley soil from farm of David Saltzman, North Berwick.
Z10	Meadow:—from G. C. Pineo, Somerset, King's Co. quite large areas of such land.

Part 10—WOMEN'S INSTITUTES.

Mr. M. Cumming,
Agricultural College,
Truro, N, S.

Sir:—It is with great pleasure that I submit the second report of the Women's Institutes of Nova Scotia.

During the past year, the work has developed amazingly and the interest shown by the old and new Institutes in the movement has been highly satisfactory. To the fourteen Institutes organized in 1913, we have added during this year twenty-two, making thirty-six in all. In June accompanied by Miss Grace Dutcher of Prince of Wales College, Charlottetown, I visited King's, Annapolis, Digby, Yarmouth, Queen's and Lunenburg Counties, held eighteen meetings and organized twelve Institutes. In July we visited Antigonish County, held five meetings and organized four Institutes. In January I organized an Institute in Bridgewater, Lunenburg County and in December one at West Brook, Cumberland County, completing the twenty-two and giving us thirty-six Institutes to date.

Second Annual Convention of Women's Institutes at Agricultural College, Truro, January, 1915.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

In March, April and May, I visited the first Institutes established and found them in good working order, and the members keenly interested in their societies. Of the individual work done by the Institutes, I shall not take space to relate as it will be duly chronicled in the report of the Second Convention which will be published after the meetings in January, 1915, but I would like to emphasize the great assistance rendered the Red Cross Work and the Belgian Relief Fund by the Institutes throughout the Province. Each one has done splendid work not only by donations of clothing and comforts, but by substantial sums of money.

Nearly all the Institutes have had special demonstrations given them, practical work in cooking, either by Miss Dutcher of Charlottetown or by Miss Miriam Cox, of Truro, and these demonstrations have been greatly appreciated and I trust will prove beneficial.

Each Institute has been offered free one of the McGill University Travelling Libraries of from twenty-five to thirty books, the use of which they may have for three months. We are very pleased to say that already fourteen Institutes have availed themselves of the offer and we hope that in time all will. The selection of books by each Institute has been of the highest standard and I trust that the members will read the books thoroughly during the long winter evenings..

In the exhibition season I was given the privilege of attending the following Fairs and judging either in part or whole the work exhibited in the Women's Department:—Port Hood, Inverness County; Musquodoboit, Halifax County; Shubenacadie, Hants County; Guysboro, Guysboro Co; Sydney, C. B., and Kentville, Kings County.

That there is plenty of room for development for Womens Work in Nova Scotia, has been amply demonstrated, and when the improved facilities for work have been established with the opening of the new building in Truro, there is every reason to believe that the Women's Institutes of Nova Scotia will be a power for good that will be felt throughout every district in our Province.

In closing I wish to thank you for the great assistance you have rendered me in this work and for your many valuable hints.

Respectfully submitted.

JENNIE A. FRASER.

PART II.

Professor M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir:—I have the honor to submit my eighth annual report in connection with the management of Agricultural Societies. I am glad to report another year of steady progress.

Of the 219 Societies which qualified for the grant last year, 11 failed to qualify. There are 15 new ones, and 3 resuscitated, being a gain of 7 Societies, making 226 now qualifying for the grant.

It will also be noted that the membership has been increased by 521, and the amount subscribed is $1070.08 more than last year.

During the last session of the Legislature the Act respecting grants was changed to read as formerly, viz: that each Society receive a grant of $40.00, and that the balance of the $14,000.00 be divided rateably on the amount of subscriptions exceeding $40.00.

The practice of reserving $1000.00 of the grant for giving bonuses to Societies that construct paddocks for exercising their bulls, and for aiding Socirties which meet with losses for which they are not responsible, has again proved very satisfactory. If every society in the province had proper paddocks and kept their bulls out in them, there would be few complaints about animals becoming useless.

The most satisfactory feature in connection wirh the work is the care displayed by most Societies in selecting Sires. Very few are satisfied with simply a registered animal; they want, in addition to a good individual, to know something of the record of his Dam, and also about his Sire's Dam, and are willing to pay for "records of merit."

"Short Courses" at the Agricultural College, the rapid advancement of Dairying in our Province, and Cow Testing Associations, have all been influential in bringing about the desirable state of affairs. Regardless of the Cause, however, breeders of pure bred stock, who are wise, will not lose sight of the fact that the day of good prices for simply *registered* animals, is fast becoming a thing of the past.

Respectfully submitted,

F. L. FULLER.

Previous Record of Agricultural Societies in Nova Scotia.

The fluctuation in the numbers and strength of Agricultural Societies in the Province during the last fifty years is shown in the following table, from which it will be seen that the number of Societies has been increased from the original number of thirty-seven to two hundred and twenty-six, membership from 1,744 to 9,769; subscriptions from $1,859.90 to $17,869.11; and grants in aid from $3,010 to $15,000.00.

Comparative Statement showing the number and strength of Agricultural Societies organized under the Act for Encouragement of Agriculture in each year, for fifty-one years from 1864 *to* 1914 *both inclusive.*

YEAR			No. of Soc.	No. of Memb's	Amount of Subscription	Grants in Aid
1st	Year	1864..............	37	1744	$1859 90	$3010 00
11th	”	1874..............	64	3971	4495 00	5830 50
21st	”	1884..............	92	5064	6361 59	6835 00
22nd	”	1885..............	88	4592	5225 00	6556 50
23rd	”	1886..............	91	4532	5334 90	6653 00
24th	”	1887..............	85	4432	1571 85	6597 00
25th	”	1888..............	83	3986	4659 47	6361 00
26th	”	1889..............	82	4398	5170 10	6444 00
27th	”	1890..............	81	4152	5257 45	6420 00
28th	”	1891..............	81	4136	5172 29	6432 20
29th	”	1892..............	80	4273	5856 53	6525 00
30th	”	1893..............	81	4068	5051 55	6309 50
31st	”	1894..............	80	4398	4424 55	8000 00
32nd	”	1895..............	83	4597	5356 15	8000 00
33rd	”	1896..............	85	4888	5657 30	8000 00
34th	”	1897..............	89	5238	5997 16	8000 00
35th	”	1898..............	103	6155	7092 90	8000 00
36th	”	1899..............	119	6974	8502 45	10000 00
37th	”	1900..............	131	7362	9322 60	10000 00
38th	”	1901..............	151	8500	10771 53	10000 00
39th	”	1902..............	163	8973	11688 43	10000 00
40th	”	1903..............	172	9444	13209 65	10000 00
41st	”	1904..............	166	8426	11634 80	10000 00
42nd	”	1905..............	164	8398	11888 90	10000 00
43rd	”	1906..............	166	8498	12900 51	10000 00
44th	”	1907..............	160	7849	15015 40	10000 00
45th	”	1908..............	167	7596	11284 77	10000 00
46th	”	1909..............	179	8090	12158 95	10000 00
47th	”	1910..............	187	8315	12732 45	10000 00
48th	”	1911..............	200	8567	13137 45	10000 00
49th	”	1912..............	205	8503	13256 73	10000 00
50th	”	1913..............	219	9248	16799 03	15000 00
51st	”	1914..............	226	9769	17869 11	15000 00

STATEMENT OF SOCIETIES FOR 1914.

There are two hundred and twenty-six Agricultural Societies in the Province which have qualified for participation in the grant for 1915. Eleven of the Societies reported last year have failed to qualify and fifteen new Societies have been added and three resuscitated.

The following list shows total number of members of the Societies of each County, the total amount of subscriptions, duly declared to, according to the Provisions of the Act, as paid by the members within the year, and the total amount of grant qualified for by the several Counties.

COUNTIES.	No. of Societies 1914.	Number of Members	Total Amount Subscription	Total Amount Grant in Aid.
Annapolis	20	850	$ 1896 00	$ 1430 68
Antigonish	24	690	1399 30	1212 73
Cape Breton	12	365	809 75	669 74
Colchester	21	833	1683 80	1325 54
Cumberland	14	582	1184 00	919 04
Digby	7	571	766 00	559 66
Guysboro	10	414	576 00	496 09
Halifax	7	269	524 00	420 38
Hants	13	495	1173 25	895 83
Inverness	15	565	983 15	820 38
Kings	12	565	1253 78	925 25
Lunenburg	21	1266	1884 40	1440 93
Pictou	27	901	1765 18	1475 31
Queens	4	142	195 00	180 11
Richmond	6	144	274 00	259 55
Shelburne	3	210	226 50	181 27
Victoria	5	107	224 00	213 80
Yarmouth	5	800	1060 50	573 71
	226	9769	$17,869 11	$14000 00

LIST of Agricultural Societies organized under the Acts for Encouragement of Agriculture with (1) *names of principal officers*; (2) *number of members;* (3) *amount of subscriptions officially declared to in the terms of the Acts as paid*

ANNAPOLIS COUNTY.

Annapolis Royal.—President, Rev. Jas. Howe, Annapolis Royal; Vice-President, Robt. Hardwick, Annapolis Royal; Secy.-Treasurer, Geo. L. Cain, Annapolis Royal; Directors: J. G. Cameron, A. J. Willis, F. J. Balcom, F. A. Chipman, W. A. Marshall, Annapolis Royal; Auditors: A.H. Harris, Fred. Goucher, Annapolis Royal................

Brooklyn.—President, Capt. G. A. Morris, Brooklyn; Secry.-Treasurer, C. E. Wright, Brooklyn; Directors: Melbourne Whitman, P. F. Young, C. A. Neily, Brooklyn; J. O. Stevenson, L. P. Bruce, Clarence; Auditors: Melbourne Whitman, C. A. Neily, Brooklyn.......................

Clarence.—President, A. P. Phinney, Clarence; Vice-President, Avard Jackson, Clarence; Secy.-Treasurer, A. J. Wilson, Clarence; Directors: V. B. Leonard, A. C. Chute, Albert Banks, C. G. Foster, J. W. Elliott, C. H. Jackson, Stewart Leonard, Clarence...........................

Clementsvale.—President, Albert S. Brown, Clementsvale; Vice-President, L. C. Sproule, Clementsvale; Secy.-Treasurer, Chas. W. Trimper, Clementsvale; Directors: Edward M. Potter, Asa Potter, Mainard Brown, Reginald Baird, Avard E. Wesley, Clementsvale; Auditors: James H. Robins, Lesley Baird, Clementsvale..................

Cleveland.—President, Major. D. G. Ritchie, Nictaux Falls; Vice-President, A. H. Harris, Nictaux Falls; Secy.-Treasurer, Archibald Feindel, Nictaux Falls; Directors; A. B. Barteaux, C. W. Hoffman, Milledge Burns, G. C. Whitman, C. C. Smith, Nictaux Falls...................

Falkland Ridge.—President, George Roop, Falkland Ridge; Vice-President, Robt. Swallow, Falkland Ridge; Secy., C. R. Marshall, Falkland Ridge; Treasurer, Wm. Sproule, Falkland Ridge; Directors: E, E. Wagner, Harry Whynot, Hiram Sproule, Percy Harratt, Dennis Wagner, Falkland Ridge; Auditors: Emerson Wagner, Robt. Swallow, Falkland Ridge..........................

for 1913; *and* (4) *total receipts, total expenditure,* (*c*) *balance in hand,* (*d*) *deficit*; (5) *amount of grant appropriated to each society for* 1914, *subject to compliance in other respects with the requirements of the Act.*

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
37	$61 50	$52 37	$231 10	$185 55	$45 55
43	65 50	54 67	142 25	173 15	*D* 30 90
61	143 00	99 27	337 25	339 75	*D* 2 50
60	108 50	79 42	277 05	278 77	*D* 1 72
23	83 00	64 74	137 07	162 44	*D* 25 37
30	70 00	57 26	181 87	96 25	85 62

Forest Glade.—President, P. D. Bent, Forest Glade; Vice-President, Fowler Forsythe, Margaretville; Secy.-Treasurer, D. A. Downing, Margaretville; Directors: A. D. Gates, Daniel Spencer, H. W. Wilkins, Forest Glade, Alva Thorne, Ernest Banks, Prince Albert; Auditors: H. W. Wilkins, Geo. Watson, Forest Glade................

Granville Centre.—President, I. Norman Wade, Granville Centre; Vice-President, Harry Goodwin, Granville Centre; Secy.-Treasurer, Frank R. Troop, Granville Centre; Directors: Henry F. Troop, Archie F. Troop, Geo. M. Bent, John McCormick, Clarence Eaton, Granville Centre...

Laurie.—President, Geo. A. Bolser, Spa Springs; Vice-President, J. S. Marshall, Spa Springs; Secy.-Treasurer, A. F. Gordon, Spa Springs; Directors: P. G. Kinney, C. W. Daniels, W. A. Gates, J. A. Woodbury, J. G. Masters, Spa Springs.......................................

Mount Hanley— President, E. J. Elliott, Mt. Hanley; Vice-President, Stanley Barteaux, Mt. Hanley; Secy-Treasurer, A. W. Slocum, Mt. Hanley; Directors: Hallet Daniels, John Slocum, Douglasville, Joshua Miller, Charles Barteaux, Israel Fritz, Mt. Hanley; Auditors: Ross Miller, Stanley Mt. Hanley.......................................

Nictaux.—President, F. M. Chipman, Nictaux West; Vice-President, G. D. Morse, Nictaux West; Secy.-Treasurer N. M. Beckwith, Middleton; Directors: F. B. Morse, Willard Ruggles, W. W. Crawford, Avard T. Neily, Nictaux Falls, N. M. Beckwith, Middleton; Auditors: E. Barteaux, R. D. Crawford, Nictaux Falls....................

Paradise.—President, J. S. Longley, Paradise; Vice-President, F. W. Bishop, Paradise; Secy.-Treasurer, R. S. Leonard, Paradise; Directors: L. H. Balcom, J. C. Phinney, H. A. Longley, J. S. Ritchey, Paradise; Auditors: H. A. Longley, A. W. Phinney, Paradise ....

Riverview.—President, H. C. Marshall, R. F. D. No. 1, Lawrencetown, Vice-President, D. M. Charlton, R. F. D. No. 1, Lawrencetown; Secy.-Treasurer, R. L. Moore, R. F. D. No. 1, Lawrencetown; Directors: R. J. Messenger, O. W. Nixon, W. W. Whitman, H. Bolard, W. M. Whitman, Lawrencetown; Auditors: R. J. Messenger, O. W. Nixon, Lawrencetown....................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
81	180 00	120 57	314 10	223 60	90 50
34	131 00	92 38	396 77	378 16	18 61
63	127 50	90 35	280 34	279 21	1 13
43	69 50	56 97	118 07	102 46	15 61
22	41 00	40 59	407 74	124 55	283 19
75	185 75	123 87	616 87	326 43	290 44
49	103 00	76 25	201 77	129 82	71 95

Springfield.—President, Jacob Roop, Springfield; Vice-President, John Crouse, Springfield; Secretary, Irving C. Mason, Springfield; Treasurer, Wm. M. Durling, Springfield; Directors: Geo. A. Durling, Jonathan Morrison, William Roop, Albert C. Grimm, Donald Morrison, Springfield; Auditors: Donald Morrison, Emery Durling, Springfield:

Stoney Beach.—President, Stephen E. Thorne, Granville Ferry; Vice-President, Herman Winchester, Granville Ferry; Secy.-Treasurer, W. B. Winchester, Granville Ferry; Directors: H. W. King, E. D. Farnsworth, E. A. Litch, Rupert Farnsworth, Ansel Orde, Granville Ferry.................

Torbrook.—President, H. P. Wheelock, Torbrook West; Vice-President, James Jefferson, Torbrook; Secretary-Treasurer, A. Stanley Brown, Torbrook; Directors: J. L. Brown, Martin Whitman, Judson Armstrong, Arthur Jefferson, Aubrey Whitman, Torbrook........................

Union.—President R. VanDitmars, Deep Brook; Vice-President J. L. McLellan, Deep Brook: Secy.-Treasurer, Robt. Spurr, Deep Brook; Directors: Walter Purdy, E. R. Pinkney, Frank Ruggles, J. R. Berry, Wallace V. Harris, Deep Brook; Auditors: Walter Purdy, Frank Ruggles, Deep Brook....

Williamston.—President, Harry Barteaux, South Williamston; Vice-President, E. C. Shaffner, South Williamston; Secy.-Treasurer, B. M. Shankel, South Williamston; Directors, A. H. Bishop, W. A. Hunt, Geo. Whitman, Fred Shaffner, A. F. Morse, South Williamston; Auditor: E. C. Shaffner, South Williamston......................

Wilmot.—President, N. P. Wood, Wilmot; Vice-President, A. P. Bowlby, Wilmot; Secy.-Treasurer, S. A. Patterson, Wilmot; Directors: M. Best, H. Bowlby, C. Banks, G. A. Wotton, J. L. VanBuskirk, Wilmot; Auditors: H. R. Pierce, J. L. VanBuskirk, Wilmot.......................

Wilmot Mountain.—President, Wm. Grant, Port Lorne; Vice.-President, Edward Resteen, Port Lorne; Secretary and Treasurer, J. Webb Milbury, Port Lorne; Directors: Joseph Hall, St. Croix, Wm. Johnson, Edgar Grant, David M. Milbury, Port Lorne, Edward Marshall, Mount Rose; Auditors: J. D. Brinton, Port Lorne, Angus Milbury, St. Croix...

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
35	70 50	57 55	210 74	264 32	*D* 62 58
25	58 50	50 64	139 89	85 00	54 89
24	45 50	43 16	114 89	83 30	31 59
52	120 00	86 04	272 32	265 60	6 72
23	51 00	46 33	403 90	452 15	*D* 48 25
27	46 00	43 45	187 91	215 58	*D* 27 67
43	135 25	94 81	New	Society	

ANTIGONISH COUNTY.

Antigonish.—President, Thos. McAnnis, Antigonish; Vice-President, John P. McNeil, Lanark; Secy.-Treasurer, J. C. McNaughton, Box 135, Antigonish; Directors: J. R. Crockett, D. D. Chisholm, J. G. Taylor, F. R. Trotter, Henry Kell, Antigonish..............................

Antigonish Harbor.—President, Hugh McNeil, Antigonish Harbor; Vice-President, Joseph McDonald, Antigonish Harbor; Secy.-Treasurer, Thomas Hogan, Harbor Road; Directors: Jos. McDonald, John W. Chisholm, Antigonish Harbor, Thomas Hogan, Harbor Road..........

Arisaig.—President, M. D. McDonald, Arisaig; Vice-President, D. McDonald, Arisaig; Secretary, L. A. Gillis, Arisaig; Directors: J. J. Ross, J. A. Smith, D. H. McDonald, Ronald McDonald, A. C. S. McDonald, Arisaig; Auditors: Angus A. McDonald, A. R. Gillis, Arisaig................

Beaver Meadow.—President, John R. McDonald, James' River Station; Vice-President, Peter McDonald, James' River Station; Secy.-Treasurer, John J. Chisholm, Briley's Brook; Directors: Wm. McDonald, D. McIsaac, Peter McDonald, H. P. Baxter, W. A. McDonald, Briley's Brook; Auditors: A. G. McDonald, Addington Forks, A. J. McDonald, James' River Station...........................

Clydesdale.— President, John Chisholm, Antigonish; Vice-President, Ronald McDonald, Clydesdale; Secy.-Treasurer, Wm. J. Chisholm, Antigonish; Directors: Christopher Grant, Harry Eadie, Adam Kirk, Herbert Smith, John W. McDonald, Clydesdale; Auditors: Herbert Smith, Ronald McDonald, Clydesdale...........................

Fairmont.—President, W. J. Walsh, Fairmont; Vice-President, Dan Cameron, Fairmont; Secy.-Treasurer, Alex. McPherson, Cloverville; Directors: Thos. Brophy, John A. McPherson, Allan Cameron, Alex. McPherson, Cloverville, P. J. Hanrahan, Fairmont; Auditors: Dan Cameron, P. D. Hanrahan, Fairmont...........................

Fraser's Grant.—President, Simon Perro, Fraser's Grant; Vice-President, Alex. S. McDonald, Fraser's Grant; Secy.-Treasurer, Alex. Fraser, Fraser's Grant; Directors: William Tate, Ronald S. McDonald, Rod J. McDonald, Clarence Rogers, Murdock Cross, Fraser's Grant; Auditors: W. J. Rogers, John A. McIntyre, Fraser's Grant...............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Total
60	89 00	68 19	388 76	194 00	194 76
24	47 50	44 31	132 55	131 24	1 31
20	40 00	40 00	159 30	1 25	158 05
33	59 25	51 07	419 51	330 20	89 31
20	46 50	43 74	115 57	83 94	31 63
28	40 50	40 29	147 18	75 85	71 33
22	41 75	41 00	241 37	193 42	47 95

Georgeville.—President, Dan A. McInnis, Georgeville; Vice-President, Dan Fraser, Georgeville; Secy.-Treasurer, John D. McGillivray, Georgeville; Directors: Hugh McIssac, Angus McLean, Rev. M. Gilles, John H. McNeil, Dan J. McInnis, Georgeville; Auditors: Angus McPherson, Dan Fraser, Georgeville. . . . .

Glassburn.—President, John J. Chisholm, Glassburn; Vice-President, Daniel Chisholm, Glassburn; Secy.-Treasurer, Duncan Chisholm, Glassburn; Directors: John R. Chisholm, John W. Chisholm, John B. McDonald, Roderick Chisholm, Glassburn, Finlay Chisholm, Meadow Green. . . . .

Harbour au Bouche.—President, John E. Corbett, Harbour au Bouche; Vice-President, Charles S. Crispo, Harbour au Bouche; Secy.-Treasurer, Michael Pelrine, Harbour au Bouche; Directors: Charles Bouche, J. T. Crispo, Moses Brow, Edward D. Fougere, W. W. Webb Harbour au Bouche; Auditors: J. T. Crispo, W. W. Webb, Harbour au Bouche. . . . .

Lakevale.—President, Duncan C. McNeil, Lakevale; Vice-President, John A. McGillivray, Lakevale; Secy.-Treasurer, Rev. D. Beaton, Lakevale; Directors; Dougald McDonald, John H. Boyd, Daniel Wallace, Angus McNeil, John A. Boyd, Lakevale; Auditors: John A. McDougall, Dan McGillivray, Lakevale. . . . .

Lochaber.—President, Archibald Cameron, West Lochaber; Vice-President, James Stewart, West Lochaber; Secy.-Treasurer, John Brown, West Lochaber; Directors: Albert Pushee, Garfield McDonald, J. T. Keating, Dan Henderson, Richard Morrison, West Lochaber; Auditors: Arthur Sutherland, William McDonald, West Lochaber. . . . .

Malignant Cove.—President, Dougald R. McDonald, Malignant Cove; Vice-President, Joseph Chisholm, Malignant Cove; Secy.-Treasurer, Michael D. McDonald, Malignant Cove; Directors: A. R. McAdam, D. M. McDonald, John D. Chisholm, James McCann, William Ross, Malignant Cove. . . . .

Maryvale.—President, R. H. McGillivray, Maryvale; Vice-President, Alex. McDougall, Maryvale; Secty.-Treasurer, R. A. MacDonald, Maryvale; Directors: D. R. McGillivray, John A. McDonald, Alex. O. McDonald, Angus H. McDonald, Allan McDonald, Maryvale; Auditors: Rev. M. Gillis, A. McDonald, Maryville. . . . .

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
38	74 50	59 85	New	Society	
32	114 50	82 87	302 52	214 49	88 03
40	71 50	58 12	103 00	93 65	9 35
25	77 25	61 43	171 72	96 39	75 33
51	85 00	65 89	119 17	114 93	4 24
17	45 00	42 88	New	Society	
17	51 00	46 33	New	Society	

Morar.—President, Angus Brown, Morar; Vice-President, John J. McPherson, Morar; Secy,-Treasurer, John A. Gillis, Morar; Directors: John McMillan, Allan Adams, James McDougall, Daniel McPherson, William McEachern, Morar; Auditors: John Hanrahan, Morar; Angus McDougall Livingstone's Cove..................................

McAra's Brook.—President, Donald McDonald, McAra's Brook; Vice-President, John D. McPherson, McAra's Brook; Secy.-Treasurer, A. B. Smith, Knoydart; Directors: C. J. McDonald, Angus McDougald, D. McDonald, John W. McAdam, John A. McDonald, McAra's Brook..........

North Grant.—President, John Ross, Box 42, Antigonish; Vice-President, Geo. Sutton, Antigonish; Secy.-Treasurer, W. A. Chisholm, Box 404, Antigonish; Directors: Frank Chisholm, John Grant, A. A. McDonald, Matthew Rogers, Christopher Chisholm; Auditors: Geo. Sutton, Thos. Somers, Antigonish..............................

Pleasant Valley.—President, Chas. McGillivray, Pleasant Valley; Vice-President, R. McDonald, Pleasant Valley; Secretary and Treasurer, R. McDonald, Pleasant Valley; Directors: Alex. McGillivray, Ronald Smith, Alex. McDonald, George Baxter, Dougald McGillivray, Pleasant Valley; Auditors: C. McGillivray, Geo. Baxter, Pleasant Valley.....

St. Andrews.—President, A. McIntosh, St. Andrews; Vice-President, Arch. A. Chisholm, Pomquet River; Secy.-Treasurer, Rev. Arch. J. Chisholm; Directors: Dr. Don. A. McIsaac, Dunmore, John C. Chisholm, Allen McDonald, Don A. Boyd, St. Andrews, John D. Chisholm, Marydale; Auditors: Arch. A. Chisholm, Pomquet River, James R. Chisholm, Marydale...............................

South River.—President, L. Gillis, Upper South River; Vice-President, D. Fraser, Fraser's Mills, Secy.-Treasurer, Dan. D. McGillivray, McPherson's; Directors: Malcolm Sinclair, Duncan McDonald, James H. Boyd, D. J. McDonald, Fraser's Mills, Angus Cameron, McPherson's..........

South River and Loch Katrine.—President, F. McNaughton Loch Katrine; Vice-President, John S. McMillan, Upper South River; Secy.-Treasurer, John A. Cameron, Loch Katrine; Directors: A. D. McIntosh, John H. Kennedy, Loch Katrine, Wentworth Taylor, A. A. McDonald, A. H. McPherson, Upper South River; Auditors: Hugh McGregor, A. D. McPherson, Upper South River....................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
24	40 00	40 00	125 82	76 35	49 47
18	41 05	40 60	177 50	72 00	105 50
35	65 00	54 38	175 55	148 25	27 30
22	46 75	43 88	83 50	85 46	1 96
22	42 50	41 43	251 19	229 67	21 52
30	75 50	60 43	270 06	180 06	90 00
21	63 25	53 38	213 14	172 45	40 69

South Side Cape George.—President, Jas. McEachern, Ballantyne's Cove; Vice-President, Duncan Gillis, Cape George; Secretary, John M. McEachern, Cape George; Directors: Malcolm McEachern, John Adams, Colin McDonald, Ballantyne's Cove, John McGillivray, Alex. McInnis, Cape George..................................

Tracadie.—President, John F. McKeough, Tracadie; Vice-President, Moses Delorey, Tracadie; Secy.-Treasurer, Wm. H. Delorey, Tracadie; Directors: Joseph A. Girroir, Joseph Delorey, Danniel Connor, Joseph Landry, Joseph McKeough, Tracadie; Auditors: Richard McMillan, Dan. R. McDonnell, Tracadie..............................

West River.—Dan. J. McDonald, Purl Brook; Vice-President, Thos. Ethridge, Purl Brook, Secy.-Treasurer, Ronald C. McGillivray, Glen Road; Directors: D. H. Williams, West River, Frank McNaughton, Salt Springs, Alex. Kirk, Alex. Kennedy, Purl Brook, John C. Fraser, Ashdale; Auditors: Cameron Chisholm, Frank McNaughton, Salt Springs..................................

Edwardsville.—President, G. W. Taylor, Edwardsville; Vice-President, S. R. Lewis, Edwardsville; Secy.-Treasurer, Jas. Keating, Edwardsville; Directors: Thos. Rudderham, J. B. Lewis, Thos. Roberts, Edwardsville; Wallace Lewis, Stanley Lewis, Point Edward...........................

East Bay.—President, Rev. J. W. McIsaac, P. P., East Bay; Vice-President, John H. McDonald, East Bay; Secy.-Treasurer, D. Jos. McIsaac, East Bay; Directors: Stephen D. Gillis, Joseph A. McNeil, Rod. A. Campbell, East Bay; Allan R. McEachern, McKenzie P. O.; Angus J. McGillivray North Side; Auditors: John H. McDonald, Angus Curry, East Bay..

Grand Mira.—President, John J. Gillis, Grand Mira South; Vice-President, Angus R. Campbell, French Road; Secretary, Neil D. Gillis, Grand Mira South; Treasurer, Archie L. Gillis, Grand Mira South; Directors: Leo Campbell, Simon R. Gillis, Alex. A. Gillis, Anthony McEachern, Joseph McKinnon, Grand Mira South; Auditors: John J. Gillis, Simon R. Gillis, Grand Mira South................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
25	40 50	40 29	145 70	74 40	71 30
37	45 00	42 87	New	Society	
29	56 50	49 50	124 60	380 12	*D* 255 52
25	80 75	63 45	132 10	115 63	16 47
27	58 00	50 35	215 80	111 89	103 99
19	40 50	40 29	107 00	103 05	4 95

George's River.—President, E. J. Johnstone, George's River; Vice-President, A. W. Gillis, George's River Station; Secy.-Treasurer, A. B. McPhee, George's River Station; Directors: Peter Almon, Wm. H. Johnstone, Wilson, Gillis, Geo. H. Young, Barney Ryan, George's River Station. Auditors: Luke Day, George's River, Daniel Young, George's River Station. . . . .

Groves Point.—President, H. A. Moffatt, Groves Point; Vice-President, Murdo Stewart, Groves Point; Secy.-Treasurer, J. Stewart, Groves Point; Directors: L. Oliver, Jim McLeod, R. K. Morrison, John McPhee, Sam. McLeod, Groves Point . . . .

Homeville and Mira Bay.—President, Ronald McKeigan, Catalone Gut; Vice-President, Harry Dillon, Round Island; Secretary-Treasurer, Charles Spencer, Mira Gut; Directors: Everett Spencer, Herbert Spencer, Roy Martel, Chas. Dillon, Wesley Nichol, Mira Gut; Auditors: Harry Dillon, Round Island, Harold Nichol, Mira Gut. . . . .

Little Bras d'Or.—President, Parker M. Rice, George's River; Vice-President, Robt. L. Moffatt, North Sydney; Secy.-Treasurer, W. W. Johnson, North Sydney; Directors: Geo. Howatson, Little Bras d'Or; Thos. Lawley, W. J. Moffatt, Charles Johnston, North Sydney; John P. Harvey, George's River; Auditors: C. W. Moffatt, Levi J. Hull, North Sydney. . . . .

Marion Bridge.—President, Alex. F. McNeil, Marion Bridge; Vice-President, Alex. Munro, Marion Bridge; Secy.-Treasurer, Neil Ferguson, Marion Bridge; Directors: Donald S. McKeigan, Donald McLeod, Rory Morrison, John A. McLean, William Morrison, Marion Bridge . . . .

North Sydney.—President, H. A. Moore, Jacksonville; Vice-President, R. M. Jackson, Jacksonville; Secy. W. J. Ingraham, North Sydney; Treasurer, A. K. Jackson, Jacksonville; Directors: John McQueen, John Redmond, C. A. Munn, Leitche's Creek; Webster Allen, Jacksonville; John Musgrave, North Sydney; Auditors: Palmer Moffatt, F. E. Jackson, North Sydney . . . .

Salem Road.—President, N. J. McDonald, Enon; Vice-President, John A. McDonald, Lake Uist; Secy.-Treasurer, A. J. McCuish, Lake Uist; Directors: J. W. McDonald, Salem Road; D. A. McDonald, Terra Nova; Archy McCuish, Alex. M. McDonald, Enon; D. A. McKinnon, Big Glen.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
39	57 25	49 92	199 86	192 13	7 73
25	50 00	45 75	New	Society	
15	50 00	45 75	124 91	118 35	6 56
36	50 25	45 89	154 74	102 00	52 74
15	45 00	42 88	214 08	201 87	12 21
44	59 00	50 95	208 73	200 43	8 30
75	225 00	146 46	528 31	528 42	*D* 11

South Bar.—President, A. R. Richardson, South Bar; Vice-President, A. J. McLeod, South Bar; Secy.-Treasurer, F. A. McInnis, Whitney Pier; Directors: A. R. McLennan, Roderick McLennan, Edward Murphy, E. A. Richardson, Richard Barrington, South Bar; Auditors: William Murphy, Y. H. Barrington, South Bar........................

Sydney Forks.—President, Rod McRae, Sydney Forks; Vice-President, Michael Gillis, Meadows Road; Secy.-Treasurer, Gus McDonald, Sydney Forks; Directors: Dan A. Gillis, Dan J. Gillis, Portage; Ambrose McDonald, Neil McNeil, M. Smith, Sydney Forks........................

COLCHESTER COUNTY.

Agricola.—President, H. M. Smith, Otter Brook; Vice-President, Frederick Tupper, Upper Stewiacke; Secretary, H. C. Dunlap, Otter Brook; Treasurer; Thos. Francis, Upper Stewiacke; Directors: C. C. Hill, Hedley Creelman, J. D. Dunlap, C. C. Cox, C. B. Bentley, Middle Stewiacke; Auditors: Hedley Creelman, J. D. Dunlap, Middle Stewiacke

Annan.—President, Angus Murray, Tatamagouche; Vice President, Alex. Conkey, Tatamagouche Mountain; Secy.-Treasurer, H. B. Cock, South Tatamagouche; Directors: Jordan Thompson, Malcolm Thompson, John Baillie, Alex. Conkey, Arthur Tucker, Tatamagouche Mountain; Auditors: Jordan Thompson, Malcolm Thompson, Tatamagouche Mountain....................................

Balmoral.—President, R. D. McKay, Balmoral Mills; Vice-President, Geo. K. McKay, Balmoral Mills; Secry.-Treasurer, John Munro, Balmoral Mills; Directors: Peter A. McDonald, Hugh W. McKay, Robert D. McKay, Geo. S. Baillie, John J. Murray, Balmoral Mills; Auditors: George S. Baillie, Hugh W. McKay, Balmoral Mills..............

Bass River.—President, J. H. Fulton, Bass River; Vice-President, S. H. Fulton, Economy; Secy.-Treasurer, Jas. Fulton, Bass River; Directors: D. H. Lank, S. H. Fulton, W. Starrett, Capt. E. Thompson, Berton Densmore, Bass River......................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
24	52 00	46 90	220 31	152 63	67 68
21	42 00	41 15	127 00	119 50	7 50
57	158 75	108 34	298 26	436 78	*D* 138 52
29	50 50	46 04	89 01	142 05	*D* 53 04
28	40 25	40 14	142 87	69 30	73 57
41	71 00	57 84	142 58	100 91	41 67

Bayhead.—President, Sidney Clarke, Bayhead; Vice-President, Geo. Dumphy, Bayhead; Secy. J. L. Cunningham, Bayhead; Treasurer, A. S. McDonald, Bayhead; Directors: Arthur Upham, Wm. Millard, A. S. McDonald, W. C. Johnson, H. Holmes, Bayhead; Auditors: Hugh McDonald, Wm. Millard, Bayhead ....

Brookfield.—President, J. T. Bell, Brookfield; Vice-President, Aaron Hamilton, Brookfield; Secy.-Treas. Elwood McLellan, Brookfield; Directors: T. D. Bates, Melville Carter, F. W. Lockhart, Albert Boomer, J. J. Hamilton, Brookfield..............................

Brule Shore.—President, R. D. Malcolm, Brule; Vice-President, John Fraser, Waldegrave; Secy.-Treas. James Reid, Brule Shore; Directors: Geo. W. Fraser, Alex, McKinnon, Noah Jollimore, Waldegrave; A. P. Semple, Brule,; Geo. Dunn, Brule Shore; Auditors: Noah Jollimore, Geo. Dunn ....

Dairy.—President, John A. Wilson, Central New Annan; Vice-President, Shepperd Langille, Central New Annan; Secy.-Treas. C. J. Cock, Central New Annan; Directors: G. R. Miller, H. McNutt, R. D. McDonald, S. Langille, J. D. Wilson, Central New Annan..............................

Earltown.—President, Geo. McIntosh, Earltown; Vice-President, Geo. Taylor, Earltown; Secy.-Treas. John A. Murray, Earltown; Directors: Geo. Taylor, Wm. McDonald, Geo. McKenzie, W. D. McKay, R. E. McKay, Earltown; Auditors: Geo. McKenzie, Geo. McIntosh, Earltown........

Farmers'.—President Murdock Currie, Londonderry Sta.; Vice-President, Robt. McKay, Londonderry Sta.; Secy.-Treasurer, Harvie Gray, East Mines Sta.; Directors: Geo. Dill, E. A. McLean, W. P. Weatherbee, Londonderry Sta.; W. E. McLean, E. C. Fletcher, Glenholme; Auditors: W. E. McLean, Robert McKay..............................

Londonderry, President, J. R. Flemming, Glenholme; Vice-President, Ernest McCully, Masstown; Secy. T. W. Morrison, Glenholme; Treas. Harvie Gray, Glenholme; Directors: A. W. Pentelow, Chas. Vance, Capt. A. McNutt, Masstown; J. P. Smith, Gordon Wyllie, Glenholme; Auditors: Arthur Putnam, DeBert Village, Gordon Wyllie, Glenholme ....

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
22	40 00	40 00	167 49	148 40	19 09
42	123 50	88 05	209 31	49 65	159 66
20	40 75	40 43	127 61	98 35	29 26
37	60 75	51 94	148 91	146 40	2 51
20	40 00	40 00	182 40	221 80	*D* 39 40
106	264 80	169 37	577 90	568 18	9 72
50	140 75	97 98	446 65	376 81	69 84

Middleton.—President, David McLeod, Denmark; Vice-President, John W. Langille, Middleton; Secy.-Treas. Oliver Stevenson, Denmark; Directors: Alex. McKay, Isaac Forbes, J. R. Hogan, E. G. Stevenson, Arthur Bryden.............

Millburn.—President, John Bonnyman, Millburn; Vice-President, J. Walter Langille, Millburn; Secy.-Treas. Henry W. Swan, Millburn; Directors: Gavin Bell, A. U. Swan, Arthur Byers, David Langille, Aubrey Byers..............

North Earltown.—President, Wellington Ross, Earltown Vice-President, Wm. M. Stewart, Earltown; Secy.-Treas. Alex. M. McKay, Earltown; Directors: Daniel R. McKenzie, Daniel G. Ross, John Matheson, W. Rod Murray, John M. Munro, Earltown; Auditors: Daniel R. McKenzie, John M. Munro.............................

North River.—President, A. F. Fulton, North River; Vice-President, C. E. Blair, North River; Secy.-Treas. Wm. Murray, North River; Directors: Calvin McNutt, Wm. Blair, C. C. Douglas, C. E. Blair, Stanley Murray, North River; Auditors: A. W. Higgins, Alex. Murray, North River

Portapique.—President, J. N. Brown, Portapique; Secy.-Treas., H. A. Baird, Portapique; Vice-President, R. M. Creelman, Portapique; Directors: J. D. Hill, W. P. Hennessey, Allen Carr, J. N. Brown, Edgar McMillan, Portapique.

Springside.—President, Warren Johnson, Newton Mills; Vice-President, Geo. Hamilton, Springside; Secy.-Treas. F. T. Gammell, Newton Mills; Directors: Cameron Pratt, Lyman Fulton, David Creelman, Newton Mills; James Creelman, Springside; Joe Archibald, Cross Roads.........

Sterling.—President, J. D. Murdock, New Annan; Vice-President, G. R. Marshall, New Annan; Secy.-Treas. Isaac Gray, Annandale; Directors: Jas. McDonald, Ira Vincent, W. M. Campbell, Wm. Gray, John Warwick, Geo. Gray, Geo. Marshall, New Annan......................

Stewiacke.—President, Chas. E. Gould, Stewiacke; Vice-President, E. G. Campbell, Stewiacke; Secy.-Treas., A. D. Fulton, Stewiacke; Directors: Foster Campbell, Russell Kelly, Allison Fulton, W. G. Erwin, J. J. Gourley, Stewiacke; Auditors: S. H. Taylor, S. T. Gould, Stewiacke.........

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
42	55 75	49 06	148 50	111 29	37 21
24	43 00	41 72	New	Society	
26	52 00	46 90	120 31	83 00	37 31
15	54 00	48 05	231 46	220 00	11 46
42	55 50	48 92	148 61	107 20	41 41
61	97 00	72 80	219 59	177 57	42 02
42	45 50	43 16	87 17	77 65	9 52
44	109 50	80 00	777 00	271 83	505 17

Tatamagouche.—President, G. B. Clarke, Tatamagouche; Vice-President, W. B. McLellan, Tatamagouche; Secy.-Treas. J. J. Clarke, Tatamagouche; Directors: Jas. Clarke, Geo. Lombard, C. P. Bryden, Willard Manthorne, Chas. McKeen, Tatamagouche; Auditors: Jas. Bryden, Gordon Clarke, Tatamagouche........................

Waugh's River.—President, Ken Sutherland, Waugh's River; Vice-President, J. W. McKay, Waugh's River; Secy.-Treas, J. M. McKay, Waugh's River; Directors: Harry Hayman, Alex. Matheson, W. M. McKay, Ken Sutherland, J. H. Sutherland, Waugh's River; Auditors: Jas. W. Blair, J. R. McKay, Waugh's River..................

CUMBERLAND COUNTY.

Amherst.—President, C. E. Shipley, Amherst; Vice-President, R. R. Black, Amherst; Secy-Treas., C. H. Black, Amherst; Directors: B. C. Gourley, Amherst; E. W. Embree, West Amherst; Directors: B. C. Gourley, Amherst; E. W. Embree, East Amherst; W. W. Embree, West Amherst; Joseph Bird, West Leicester; C. V. Thompson, Fort Lawrence; Auditors: Norman Black, Samuel Freeman, Amherst.

Beckwith.—President, R. S. Flinn, Beckwith; Vice-President, C. H. Angus, Carrington; Secretary, R. D. Walker, Beckwith. Directors: Vance Mattinson, Philip Mattinson, Morten Eaton, Beckwith; William Fraser, Charles Ripley, Rossindale...............................

East Wallace Union.—President, D. G. McKenzie, Malagash; Vice-President, Stephen Seaman, East Wallace; Secy.-Treas. J. H. Lantz, East Wallace; Directors: J. C. McKenzie, W. C. Smith, John Hickey, Geo. Ross, J. H. Miller, East Wallace. Auditors: W. C. Smith, Charles Carlyle, East Wallace...........................

Fox Harbor.—President, D. M. Bacon, Fox Harbor; Vice-President, Lewis Green, Fox Hgrbor; Secretary, James Robertson, Fox Harbor; Treasurer, Stanley Robertson, Fox Harbor; Directors: D. R. Stromberg, Murray Robertson, J. A. McFarlane, Thos. McAuley, Freeman Hartling, Fox Harbor. Auditors: Murray Robertson, William Oxley, Fox Harbor...................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Total
50	78 00	61 87	199 67	168 55	29 12
35	62 50	52 93	106 39	102 75	3 64
151	356 00	221 85	1037 76	873 20	164 56
21	41 00	40 58	182 34	150 58	31 76
22	44 00	42 30	103 60	70 15	33 45
39	58 00	50 35	101 23	201 35	100 12

Lorneville.—President, W. H. Jackson, Lorneville; Vice-President, Manford Oxley, Tidnish; Secy.-Treas. James J. Brown, Lorneville. Directors: Earl Jackson, Allison Baxter, Chas. Ogden, Thos. Ogden, Walter Embree, Tidnish. Auditors: John H. Jackson, Chas. Jackson, Lorneville......

Malagash.—President, James Beattie, Blue Sea Corner; Vice-President, J. B. Lombard, Blue Sea Corner; Secy.-Treas., J. T. Treen, Malagash Centre. Directors: Jacob Treen, Boyd Whiting, Geo. W. Myers, Arthur Treen, C. B. Stewart, Blue Sea Corner. Auditors: J. B. Lombard, Boyd Whiting, Blue Sea Corner........................

Middleboro.—President, C. A. Fountain, Upper Middleboro; Secy.-Treas., G. G. McKim, Hartford. Directors: E. Howard, D. Howard, Geo. Angevine, Arthur Nelson, Middleboro, Hebert Crawford, Hartford. Auditors: Wm. Howard, Middleboro; Percy McKim, Hartford..........

Minto.—President, David Bacon, Nappan Station; Vice-President, H. L. Donkin, Fenwick; Secy.-Treas., J. Wellington Lowther, Nappan Station. Directors: James I. Stewart, Amherst Point; Frank L. Roach, J. McCully Pipes, Herbert Blenkhorn, Nappan Station; Joseph E. Harrison, Maccan. Auditors: David Bacon, F. L. Roach...........

Parrsboro.—President, G. H. Jeffers, Lakeland; Vice-President, D. W. Holmes, Cross Roads; Secy.-Treas. Robie Kirkpatrick, Kirk's Hill. Directors: H. R. Berry, New Prospect; D. O'Regan, J. E. Brown, Wm. Murray, Lakelands A. F. Sencebaugh, Parrsboro. Auditors, H. Fader, Parrsboro; Lenley Grant, New Prospect......................

Pugwash.—President, A. R. D. Mitchell, Pugwash; Vice-President, Beecher Robertson, Pugwash; Secy.-Treas. D. J. Mitchell, West Pugwash. Directors: J. H. Matheson, Gordon Fullerton, Harry Tuttle, J. W. Henderson, C. C. Colbourne, Pugwash. Auditors: Hugh Clark, Ernest D. Mitchell, Pugwash...............................

Shinimecas.—President, E. E. Fisher, Shinimecas Bridge; Vice-President, G. O. Smith, Shinimecas Bridge; Secy.-Treas., J. C. Brander, Shinimecas Bridge; Directors: G. O. Smith, L. S. Fisher, Roy Fisher, J. A. Moore, A. Purdy Blair, Shinimecas Bridge. Auditors: J. C. Black, Joseph Smith, Shinimecas Bridge......................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
52	131 00	92 37	176 86	223 63	*D* 46 77
33	108 50	79 42	224 17	175 33	48 84
52	62 75	53 08	188 04	182 00	6 04
25	97 00	72 80	201 72	195 06	6 66
18	41 50	40 86	204 76	148 30	56 46
27	47 25	44 17	95 05	94 31	74
29	46 50	43 74	215 23	84 75	130 48

Upper Wentworth, Samuel Little, Wentworth Station; Vice-President, J. N. McNutt, Wentworth Station; Secy.-Treas., R. C. Swallow, Wentworth Centre. Directors: W. A. Weatherbee, A. M. Ferguson, W. W. Purdy, W. B. Henderson, Wentworth Station; J. R. Ogilvie, Henderson Settlement. Auditors: W. W. Purdy, W. A. Weatherbee....

Victoria.—President, Moore S. Thompson, So. Victoria; Vice-President, Everett Webb, Victoria; Secy.-Treas. John W. Crowley, Streets Ridge. Directors: Duncan Ross, Egerton Betts, Clarence Thompson, Victoria; Stanley Stewart, So. Victoria; Dan Crowley, Streets Ridge..........

Wallace Grant.—President, Garfield Coulter, Wallace Grant; Vice-President, Wm. McEachern, Wallace Highland; Secy.-Treas., A. W. Stevens, Wallace Grant. Directors: Allan Reeves, South Wallace; Charles McEachern, McLellan Cole, Clarence Archibald, Wm. McFarlane, Wallace Grant. Auditors: Johnson Stevens, A. G. McIntosh, Wallace Grant.

DIGBY COUNTY.

Belliveau Cove.—President, Lennie Belliveau, Belliveau's Cove; Vice-President, Felix Gaudet, Belliveau's Cove. Directors: Alca Belliveau, Damien Doucett, Emilier LeBlanc, Joseph C. Theriault, Augustus Theriault, Belliveau's Cove.......................................

Digby Central.—President, John O. Turnbull, Lighthouse Road; Vice-President, James Trevoy, Brighton; Secy.-Treas., Frank W. Nichols, Digby. Directors: James Young, Jonathan Letteney, Digby, D. C. McKay, Acaciaville; H. C. McNeil, North Range; Jacob Trask, Marshalltown...

Gilbert's Cove.—President, Fred Seabean; Gilbert's Cove; Vice-President, Andrew Morrisey, Gilbert's Cove; Secy.-Treas., Clarence Kinney, Gilbert's Cove; Directors: Albert Melanson, Leander Kinney, Maud Thibideau, Chas. Comeau, Gilbert's Cove; Chas. W. Kinney, Ashmore. Auditors: Henry Kinney, Allen Kinney, Ashmore...............

Hillsburg.—President, J. Bryon, Bear River; Vice-President, W. E. Reade, Bear River; Secy. C. F. McDormand, Bear River; Treas., H. R. Kinney, Bear River; Directors: Ezra Miller, Harvey Chisholm, Harry Harris, Fred Reade, Charles Harris, Bear River. Auditors: W. E. Reade, C. F. McDormand, Bear River.........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Total
45	45 00	42 88	182 95	159 18	23 77
28	41 00	40 58	99 82	85 00	14 82
40	64 50	54 08	217 69	212 20	5 49
43	80 00	63 02	304 56	120 00	184 56
195	268 20	171 32	632 12	410 67	221 45
63	73 80	59 45	212 09	205 34	6 75
75	75 00	60 14	886 27	820 95	65 31

Little Brook.—President, Fred Comeau, Little Brook; Vice-President, Eddie Gaudet, Comeauville; Secy.-Treas. Arnaud S. Comeau, Little Brook. Directors: Isaac H. LeBlanc, Church Point; Rubert Cutheau Albanie LeBlanc, Little Brook; Augustine A, Comeau, Sigefried F. Comeau, Comeauville. Auditors: Symphorium LeBlanc, Francis Theriault. ....

St. Mary's.—President, Benjamin Robbins, Sandy Cove; Vice-President, James Cossaboom, Sandy Cove; Secy-Treas. Edward McKay, Sandy Cove; Directors: Amasa Eldridge, Terah Morehouse, William Eldridge, Kenneth Dakin, George Holmes, Sandy Cove..........................

Smith's Cove.—President, A. H. Wier, Smith's Cove; Vice-President, J. W. Rice, Smith's Cove; Secy.-Treas. Spurgeon Weir, Joggins Bridge. Directors: J. L. Sulis, J. S. Potter, John Thomas, Frank Sulis, Joggins Bridge; Edward Winchester, Smith's Cove. Auditors: Wm. Cossaboom, H. H. Woodman, Joggins Bridge...................

GUYSBORO COUNTY.

Erinville.—President, Patrick Walsh, Erinville; Vice-President, William McDonald, Erinville; Secretary, Michael Flynn, Erinville. Directors: Patrick Kenney, John H. Morrison, Edward White, William McKinnon, Michael Doyle, Erinville. Auditors: John Walsh, Lewis McKinnon, Erinville..

Goshen.—President, Andrew Sinclair, Goshen; Vice-President, Jas. A. Sinclair, Goshen; Secy.-Treas. Alex Sinclair, Goshen. Directors: J. F. Forbes, Leonard Sinclair, W. H. Sinclair, Alfred Forbes, Wm. McIntosh, Goshen. Auditors: A. F. McNaughton, John A. Sinclair, Goshen.

Glenelg.—President, David Whidden, Glenelg; Vice-President, A. D. Archibald, Glenelg; Secy.-Treas., A. H. McKeen, Glenelg. Directors: G. L. Cameron, A. G. Lawson, Arch Jordan, Dougal A. Cameron, T. A. McKeen, Glenelg. Auditors: A. G. Archibald, T. A. McKeen, Glenelg...

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
70	100 00	74 53	333 41	255 63	77 78
97	129 00	91 20	387 41	216 40	171 01
28	40 00	40 00	81 04	81 04	
25	43 00	41 72	121 00	107 95	13 05
29	40 00	40 00	188 15	193 55	*D*5 40
45	45 00	42 88	162 14	168 09	*D*5 95

Guysboro.—President, J. A. Fulton, Guysboro; Vice-President, Wm. Whitman, Guysboro; Secy.-Treas. C. E. Jost, Guysboro. Directors: Wm. Johnson, Roachvale; Danl. Kennedy, Tomkinsville; John H. Skinner, John E. Dillon, W. E. Scott, Guysboro. Auditors: L. E. Hart, R. H. Morrison, Guysboro..........................

Intervale.—President, Wm. G. Aikens, Intervale; Vice-President, James Wall, Intervale; Secretary, Bruce Ferguson Intervale. Directors: John McPherson, Hugh Ferguson, David Cameron, Wm. McKenzie, Intervale..............

Lakedale and Giant's Lake.—President, John J. McNeil, Giant's Lake; Vice-President, Angus D, McIsaac, Giant's Lake; Secy.-Treas., Ronald McIsaac, Giant's Lake. Directors: Roderick McLean, Lakedale, John C. McIsaac, C. P. Miller, Giant's Lake; Thomas Kennedy, Angus Dan McIsaac. Auditors, J. J. McLean, John McPherson, Lakedale..

Manchester.—President, John A. McMaster, Boylston; Vice-President, J. R. O'Brien, Manchester; Secy.-Treas. Stanley Lipsett, Manchester. Directors: Dan Conoly, Milton Simpson, Harry Simpson, Hugh Cuming, Abner S. Myers, Manchester..............................

New Town.—President, A. T. McBain, New Town; Vice-President, Wesley McKay, Willowdale; Secy.-Treas. John T. McBain, New Town. Directors: John A. McLean, W. H. Archibald, Baxter Cameron, New Town. Auditors: John A. McLean, Wesley McKay, New Town.............

Stillwater.—President, H. A. McLean, Stillwater; Vice-President, M. A. Whidden, Stillwater; Secretary, W. A. McDonald, Stillwater; Treasurer, A. McDonald, Stillwater. Directors: W. H. Whidden, W. B. Fraser, Rod Weir, Stillwater; Murdock Whitman, Sherbrooke; Lochlin Fraser, Goldenville...................................

Port Hilford and Wine Harbour.—President, John G. Cooper, Wine Harbour; Vice-President, John R, Hurst, Port Hilford; Secty.-Treas., Fred L. Hewitt, Port Hilford. Directors: George A. Hirschfield, Andrew Gillies, Moses Mugford, A. J. Flemming, Wine Harbour; Austen Pickett, Indian Harbour Lake. Auditors: John R. Kinley, Port Hilford; James D. McDonald, Wine Harbour............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
72	103 00	76 24	503 81	503 25	56
52	65 00	54 38	105 00	111 32	*D*6 32
18	43 00	41 72	159 85	75 00	84 85
81	99 50	74 24	254 95	224 92	30 03
20	40 50	40 29	157 04	145 54	11 50
30	40 00	40 00	159 90	80 00	79 90
42	48 00	44 60	New	Society	

HALIFAX COUNTY.

Dartmouth.—President, M. Tulloch, Cole Harbor; Vice-President, W. Peverill, Cole Harbor; Secy.-Treas., G. E. Eisener, Dartmouth. Directors: H. Baker, J. R. Morash, R. A. Innes, W. L. Eisener, C. J. Keeler, Dartmouth........

Elderbank.—President, Cameron McMullin, Elderbank; Vice-President, Robert Ogilvie, Elderbank; Secy.-Treas., H. E. Cole, Elderbank. Directors: Geo. McLellan, Henry Grant, Harris Dares, Chas. Ogilvie, Morton McMullin, Elderbank. Auditors, Clarence Cole, Allen Ogilvie, Elderbank..

Eastern Star.—President, James A. Thomas, Preston; Vice-President, Seymore Lapire, Preston; Secretary, Joseph Thomas, Preston; Treasurer, Henry Sanders, Preston; Directors: Samuel Williams, Shadrick Ross, Geo. Williams, Samuel Tyler, Preston. Auditors: Seymore Lapire,Samuel Williams, Preston...............................

Halifax.—President, John McAloney, Halifax; Vice-President, R. H. Edwards, Halifax; Secretary, H. H. Blois, 225 Quinpool Road, Halifax; Treasurer, R. Duggan, Halifax. Directors: F. Edwards, G. Creighton, G. W. Irving, Halifax. Auditors: F. Edwards, E. Goudge, Halifax........

Musquodoboit.—President, Wesley Ritchie, Musquodoboit Harbor; Vice-President, George Landels, Musquodoboit Harbor; Secretary, Spencer Sutherland, Musquodoboit Harbor; Treasurer, Leander Smith, Smith Settlement. Directors: James A. Ritchey, John H. Rowlings, Alexander Slade, Robert J. Stoddart, Musquodoboit Harbor; Oswald Mosher, South Settlement...........................

Middle Musquodoboit.—President, R. H. Reid, Brookvale; Vice-President, Samuel Hanna, Middle Musquodoboit; Secy.-Treas., Chas. Logan, Middle Musquodoboit. Directors: Matthew White, M. H. Guild, John B. Archibald, Robert Kaulbach, Middle Musquodoboit; Geo. H. Taylor, Chaswood. Auditors: J. A. Sedgewick, Arnold Gladwin, Middle Musquodoboit..............................

Seaside.—President, Freeman Sellars, Lawrencetown; Vice-President, Isaac Sellars, Lawrencetown; Secretary-Treasurer, W. D. Conrad, Lawrencetown. Directors: Henry Naugle, Morris Conrad, Wm. Robinson, Norman Fritz, Allison Lapierre, Lawrencetown. Auditors: Sidney Sellars, Norman Fritz, Lawrencetown...........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
40	40 00	40 00			
29	70 00	57 26	268 95	233 58	35 37
24	48 00	44 60	126 17	126 00	17
34	50 00	45 75	590 53	269 70	320 83
65	110 00	80 27	278 08	272 05	6 03
62	166 00	112 50	1371 02	1659 09	*D*288 07
15	40 00	40 00	255 33	216 30	39 03

HANTS COUNTY.

Avon.—President, David Withrow, Newport Landing; Vice-President, Leonard Parker, Newport Landing; Secy.-Treas. Edward B. Mosher, Highfield; Directors: W. B. Wallace, E. B. Mosher, William Withrow, Newport Landing; John Shaw, Poplar Grove. Auditors: George Allison, Freeman Connors, Newport Landing.............

Burlington.—President, R. P. Harvie, Burlington; Vice-President, Alonzo Hzrvie, Burlington; Secy.-Treas., Robie C. Sandford, Burlington. Directors: Clarence Harvie Daniel Young, Fred Blackburn, Welsford Salter, James Sanford, Burlington. Auditors: Harvey Lynch, Henry H. Card, Burlington..............................

Fenwick.—President, Seymour Main, East Noel; Vice-President, Israel McCallum, Noel; Secretary, Isaac H. Densmore, Burncoat; Treasurer, Milton O'Brien, Noel. Directors: Charles McCulloch, Simon McCulloch, Harold O'Brien, Sidney O'Brien, Noel, Morris Densmore, East Noel..

Gore.—President, W. L. Wallace, West Gore; Vice-President, Wm. B. McDougall, West Gore; Secy.-Treas. James S. Blois, Gore. Directors: Esson McDougall, M. A. Wallace, West Gore; Ansell Scott, Seymour Wallace, Gore; Esrom Williams, Riverside Corner. Auditors: H. B. McDougall, West Gore; Gordon Ward, Riverside Corner.

Hantsport.—President, Lee H. Schurman, Mt. Denson; Vice-President, Wilburt Dorman, Lockhartville; Secy.-Treas. Roy A. Davis, Mt. Denson. Directors: H. L. Shaw, Arthur Gill, Gordon McKern, Thomas Trefry, E. L. Gertridge, Mt. Denson. Auditors: S. P. Schurman, T. D. Faulkner, Mt. Denson...................................

Kempt.—President, LeRoy P. Sandford, Summerville; Vice-President, Palmer Burgess, Kempt Shore; Secy.-Treas. E. E. Skaling, Kempt Shore. Directors: Albert Greeno, David H. Dodge, Kempt Shore. Auditors: Bertram Card, J. B. Armstrong, Kempt Shore.......................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
20	105 00	77 40	173 29	134 20	39 09
29	54 50	48 34	212 51	121 19	91 32
29	56 00	49 20	137 76	125 58	12 18
16	65 50	54 68	245 10	135 30	109 80
45	78 00	61 87	252 41	189 49	62 92
33	84 00	65 32	335 23	229 45	105 78

Maitland.—President, Thos. G. Smith, Maitland; Vice-President, Herbert Eaton, Maitland; Secy.-Treas. W. F. Roy, Maitland. Directors: John Carr, Lawson Hayes, Duncan McDougall, Herbert Eaton, Capt. George Douglas, Maitland. Auditors: Wm. McKenzie, Duncan McDougall, Maitland...

Meander.—President, Howard Smiley, Newport; Vice-President, J. M. Harvey, Newport; Secy.-Treas. Morris Dill, Newport. Directors: Fred Cameron, Clayton McKay, Amos Veinott, Andrew Harvie, Newport. Auditors: Herbert Robinson, Howard Harvey, Newport............

Progress.—President, George Wright, Elmsdale; Vice-President, George Fraser, Elmsdale; Secy-Treas., Hugh Fraser, Elmsdale. Directors, James Tullos, Joseph Fleming, Gordon Casey, C. E. McMillan, Marshall Welwood, Elmsdale. Auditors: E. G. McMillan, Gordon Casey, Elmsdale...

Scotch Village.—President, B. Anthony, Scotch Village; Vice-President, H. W. Dimock, Scotch Village; Secy.-Treas., L. M. Smith, Scotch Village. Directors: Percy Cochrane, Lorenzo Anthony, Geo. O. Smith, Minard Nelson, Job Sanderson, Scotch Village. Auditors: H. W. Dimock, Percy Cochrane, Scotch Village.....................

Selmah.—President, Wm. Sterling, Selmah; Vice-President, Robert Cox, Sterling Brook; Secy.-Treas. Harold Fiske, Selmah. Directors: A, M, Anthony, Lower Selmah; Cyrus Weldon, George McDuffie, Selmah; Harry Densmore, Ormond Sterling, Sterling Brook..................

Shubenacadie.—President, James McKenzie, Shubenacadie; Vice-President, Edwin Wardrobe, Milford; Secretary: A. H. Snide, Shubenacadie; Treasurer: E. M. Dewis, Shubenacadie. Directors: George Moore, Harry Stewart, Harry Henry, Thos. Blackburn, Allison McDonald, Shubenacadie. Auditors: J. A. Kirkpatrick, Watson Smith, Shubenacadie..

Windsor.—President, Wm. O'Brien, Windsor Forks; Vice-President, E. B. Sweet, Martock; Secy., Geo. W. DeWolf, Three Mile Plains; Treas., Geo. O'Brien, Windsor Forks. Directors. James Vaughan, George Haley, Fred McHeffey, Allison Bacon, Fred Morton. Auditors: Campbell McNeil, Winburn Saunders...........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
26	50 00	45 75	174 31	80 25	94 06
17	44 25	42 45	170 70	123 72	46 98
41	41 00	40 57	161 13	119 00	42 13
27	76 00	60 71	149 22	144 49	4 73
30	58 00	50 35	157 14	102 70	54 44
97	229 00	148 76	663 18	488 57	174 61
85	232 00	150 48	437 75	423 95	13 80

INVERNESS COUNTY.

Black River.—President, A. D. Beaton, Glenora Falls; Vice-President, Jas. Beaton, Alexander; Secry.-Treas., A. J. Campbell, Beatonville. Directors: Neil McKinnon, John A. Campbell, M. F. Campbell, Glenora.....................

Cheticamp.—President, Baptiste Lefort, Point Cross; Vice-President, Dewis AuCoin, Point Cross; Secy.-Treas. Patrick Cormier. Directors: John Cormier, Emilien Lefort, Paul Deveau, Chas. AuCoin, Thos. AuCoin, Point Cross. Auditors: Ephraim Chiasson, John AuCoin, Point Cross.....

Emerald.—President, Alex. Miller, Emerald; Vice-President, Nicholas Coady, Emerald; Secy.-Treas. Jas. Tompkins, Emerald. Directors: Joseph R. Murray, John I. Murphy, Alex. Tompkins, Daniel McLellan, Hugh McLellan, Emerald Auditors: Alex. Miller, John I. Murphy, Emerald ....

East Margaree.—President, A. A. Taylor, Margaree Harbor; Vice-President, John R. LeBlanc, East Margaree; Secy.-Treas., Dr. R. McDonald, P.P., East Margaree. Directors: Philip LeBlanc, Dan P. LeBlanc, East Margaree, L. L. MacNeil, Scotch Hill, D. J. MacKinnon, Margaree Harbor..

Glenville.—President, Rev. J. M. McLean, Strathlorne; Vice-President, Alex. McDonald, Strathlorne, Secretary, J. J. McLellan, Glenville; Treasurer, W. D. McInnis, Glenville. Directors: Allan McKinnon, John H. McKinnon, Charles J. McLean, Strathlorne; John A. McLellan, D. W. McLellan, Glenville. Auditors: D. A. McLellan, A. D. McLellan, Glenville..................................

Marble Mountain.—President, Dan J. Morrison, Marble Mountain; Vice-President, Murdoch A. Campbell, Marble Mountain, Secy.-Treas., John D. McAskill, Marble Mountain. Directors: Alex. McMillan, John McKay, Murdoch A. Campbell, Marble Mountain; Peter R. McIntyre, Lime Hill, Hugh Calder, Malagawatch.......................

Margaree Forks.—President, John J. Cody, Margaree Forks; Vice-President, Peter McDaniel, Margaree Forks; Secretary, Duncan McDonald, Margaree Forks; Treasurer, Thomas Tompkins, Margaree Forks. Directors: A. W. Chisholm, Gabriel Chiasson, Peter J. Cody, Charles Miller, John A. Chiasson, Margaree Forks. Auditors: John P. Cody, Martin M. Cameron, Margaree Forks..............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
15	40 00	40 00	194 14	90	193 24
40	81 00	63 59	162 34	121 74	40 60
21	50 00	45 75	110 69	62 14	48 55
60	82 00	64 17	241 14	302 24	61 10
28	41 00	40 57	198 95	83 20	115 75
35	46 00	43 45	154 46	113 57	40 89
36	85 00	65 89	235 67	220 55	15 12

Melford.—President, Dan McKinnon, Melford; Vice-President, A. W. McPhail, Melford; Secy.-Treas. D. O'C. Doyle. Directors.: Angus R. McLeod, Malcolm McLennan, Duncan McPherson, A. J. Chisholm, A. W. McPhail........

North East Margaree.—President, John A. Burton, North East Margaree; Vice-President, Joseph J. Ross, North East Margaree; Secretary, Albert Ingraham, North East Margaree; Treasurer, Ralph McPherson, North East Margaree; Directors: James Murphy, Alfred McDonald, Alfred Hunt, George Coady, David Greig, North East Margaree. Auditors: John M. Ross, Simon Fraser, North East Margaree...

Orangedale.—President, Arch McPhail, Orangedale; Vice President, Wm. Miller, Orangedale; Secretary, Daniel McLean, Orangedale. Treasurer Thos. McNeil. Directors: L. S. Cassels, N. D. Gillis, M. McIvor, A. D. McLean, D. Cameron, Orangedale.................................

Port Hood.—President, Murdock McPherson, Rear Port Hood; Vice-President, William J. Sutherland, Little Mabou; Secy.-Treas., John R. McDonald, Port Hood; Angus McPhee, John A. Gillis, Little Mabou; Allan Gillis, John A. Smith, Port Hood....................................

Rossville.—President, M. H. McLeod, M. E. Margaree; Vice-President, Joseph J. Ross, N. E. Margaree; Secy.-Treas. J. Mariner Smith, N. E. Margaree. Directors: Norbert McDaniel, John L. Tompkins, Caleb Ross, Peter P. Cody, Edward A. Ross, N. E. Margaree. Auditors: Donald Ethridge, John J. McDaniel, N. E. Margaree.............

River Denys.—President, James M. R. McIntyre, River Denys; Vice-President, William D. McLennan, River Denys; Secy.-Treas., John A. McLennan, River Denys. Directors: Mal. McKenzie, K. McKenzie, J. D. McKay, Hugh M. McPherson, Hugh P. McIntyre, River Denys. Auditors-: M. D. McLeod, Alex. R. McLean, River Denys...........

St. Joseph.—President, Germain J. Chiasson, Friar's Head Chapel; Vice-President, David J. Doucett, Grand Etang; Secretary, John B. J. Chiasson, Friar's Head Chapel; Treasurer, Marcellin AuCoin. Directors: P. AuCoin, Jr., Louis J. Cormier, Friar's Head Chapel; Peter Porier, David J. AuCoin, Thos. E. Doucett, Grand Etang.......

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
30	40 15	40 08	253 40	213 77	39 63
34	57 00	49 78	136 91	154 73	17 82
45	172 50	116 24	New	Society	
40	43 00	41 72	220 43	205 55	15 88
15	40 00	40 00	208 76	125 02	83 74
21	42 00	41 15	New	Society	
110	110 00	80 27	316 95	291 69	25 26

South West Margaree.—President, D. D. McFarlane, S. W. Margaree; Vice-President, Allan A. McDonald, S. W. Margaree; Secy.-Treas., A. S. McDougall, S. W. Margaree. Directors: James A. McFarlane, Alex. H. Gillis, Upper Margaree; D. J. Gillis, D. E. Collins, James M. McDonald, S. W. Margaree. Auditors: J. D. McFarlane, James F. Collins, S. W. Margaree..................................

KINGS COUNTY.

Aylesford.—President, F. E. Mesiter, Auburn; Vice-President, S. S. Selfridge, Aylesford; Secy.-Treas. R. T. Patterson, Aylesford. Directors: T. K. Patterson, D. F. Bowlby, J. R. Taylor, Milton Taylor, Fred Crichton, Aylesford. Auditors: J. J. Patterson, D. W. Porter, Aylesford.

Dalhousie East.—President, C. P. Wilson, Dalhousie East; Vice-President, G. A. Taylor, Dalhousie East; Secretary, John Long, Dalhousie East; Treasurer, W. O. Wright, Dalhousie East. Directors: Allister Kaulback, Robert Wilson, Solomon Meldrum, William Oickle, G. A. Taylor, Dalhousie East. Auditors: Robt. Wilson, E. H. Saunders, Dalhousie East.................................

Gaspereaux.—President, K. E. Hunter, Gaspereaux; Vice-President, E. L. Duncanson, Gaspereaux; Secy.-Treas. P. J. Gertridge, Gaspereaux. Directors: A. B. Coldwell, R. A. Kennie, Moody Miner, Brenton Davison, James Gertridge, Gaspereaux. Auditors: F. L. Gertridge, R. A. Jodrey, Gaspereaux.............................

Highland.—President, Geo. Brown, North Mountain; Vice-President, Z. West, Hall's Harbor; Secy.-Treas., Rae Bennett, E. Hall's Harbor. Directors: Chas. Watson, Alfred Brown, Wm. Wood, Borden Steele, Boey Porter, E. Hall's Harbor. Auditors: Boey Porter, Harry Wood, E. Hall's Harbor....................................

Kings County.—President, F. G. Curry, Hortonville; Vice-President, W. C. Trenholm, Grand Pre; Secy.-Treas., F. H. Crane, Grand Pre. Directors: F. T. Beattie, Ross Fullerton, R. W. Woodman, Alfred Perry, Geo. Huntley. Auditors: Miss A. M. Stuart, F. E. Fuller..................

Kingston.—President, E. L. Foster, North Kingston; Vice-President, H. J. Neily, North Kingston; Secy.-Treas. G. S. Smith, Kingston. Directors: Thos. Hill, F. W. Foster, J. C. Welton, B. W. Cleveland, H. J. Neily, North Kingston.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
35	53 50	47 76	106 85	2 00	104 85
71	120 50	86 32	680 06	551 53	128 53
24	43 90	42 24	90 90	135 14	44 24
61	140 00	97 55	390 76	182 90	207.86
40	94 00	71 07	217 40	138 00	79 40
88	231 00	149 91	451 97	207 58	244 39
27	89 00	68 19	219 65	273 58	53 93

Morrison.—President, W. A. Easson, Aylesford; Vice-President, A. H. Ewing, Morristown; Secy.-Treas., Geo. A. Roland, Aylesford. Directors: F. Johnson, N. A. Wilson, Ross McNeil, Geo. West, E. A. Hutchinson, Morristown. Auditors: Otis Nichols, James French, Morristown. . . . .

Scott's Bay.—President, Joshua Huntley, Scott's Bay; Vice-President, Daniel L. Legg, Scott's Bay; Secy.-Treas. H. L. Corkum, Scott's Bay. Directors: Oxley Steele, M. W. Steele, Wyman Shaw, L. A. Huntley, Wm. Tupper, Scott's Bay. Auditors: M. W. Steele, Wm. Tupper, Scott's Bay. . . . .

South Berwick.—President, R. H. Banks, Waterville; Vice-President, M. Chute, Berwick; Secy.-Treas., H. P. Banks, Waterville. Directors: N. A. Osborne, B. H. Lee, I. B. Shaw, W. S. Skinner, J. S. Margeson, Waterville. Auditors: N. A. Osborne, R. M. Shaw, Waterville. . . . .

Tremont.—President, E. G. Jefferson, Tremont; Vice-President, M. E. Baker, Tremont; Secy.-Treas., G. O. Woodbury, Tremont. Directors: Erie Neily, Torbrook Mines; Geo. Ward, C. F. Welton, R. E. Saunders, Tremont South; L. P. Welton, Kingston Village. Auditors: J. A. Banks, Walter McGregor, Kingston Village. . . . .

Union.—President, C. C. H. Eaton, Canard; Vice-President, C. A. Newcombe, Canard; Secretary, Herbert Ells, Canard. Directors: L. Eaton, F. W. Thomas, Jos. Kinsman J. E. McGowan, R. U. Harris, Canard. Auditors: H. Morris, G. R. Pineo, Canard. . . . .

West Cornwallis.—President, N. J. Bryden, Berwick; Vice-President, A. M. Bishop, Berwick; Secy.-Treas., P. S. Illsley, Somerset. Directors: A. L. Reid, I. W. Baker, R. L. Palmer, F. A. Illsley, A. Jordan, Berwick; Auditors: A. L. Reid, G. M. Magee, Berwick. . . . .

LUNENBURG COUNTY.

Bridgewater.—President, A. Wm. Hebb, Bridgewater; Vice-President, G. B. Hebb, Bridgewater; Secy.-Treas. J. W. Margeson, Bridgewater; Directors: Charles Walker, Peter Wylde, Claude Cook, Lemuel Hebb, Wallace Rhodenizer Bridgewater; Auditors: Wm. Duff, G. A. Hubley, Bridgewater. . . . .

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
32	45 25	43 02	438 94	360 73	78 21
36	64 00	53 81	270 84	118 55	152 29
40	58 53	50 66	260 88	115 13	145 75
33	84 00	65 32	239 23	244 30	5 07
44	158 00	107 90	475 45	335 97	139 48
69	125 60	89 26	300 20	301 99	1 79
157	313 50	197 40	4859 20	3998 90	860 30

Blandford—President, Harris Publicover, Blandford; Vice-President, Rufus Gates, Blandford; Secy.-Treas., Solomon D. Zinck, Blandford. Directors: Warren Publicover, Henry Gates, Albert Cleveland, Blandford; John Backman, Austen Cleveland, Bayswater. Auditors: Corneilius Zinck, Arthur Publicover, Blandford........................

Central.—President, Charles Silver, Rhodes Corner; Vice-President, Wallace Conrad, Upper La Have; Secy.-Treas. W. L. Mulock, Rhodes Corner. Directors: Israel Beck, David Hirtle, Upper La Have; Robt. Randall, James Demone, Rhodes Corner; Wallace Falkenham, Whynot Settlement. Auditors: Chas. Wentzell, Rhodes Corner; James Fraser, Upper La Have.........................

Centreville.—President, W. W. Crandall, Barss' Corner; Vice-President, Waldron Nichols, Barss' Corner, Secy.-Treas., J. L. DeLong, Barss' Corner. Directors: Adam Webber, L. J. Dunn, W. W. Crandall, O. J. Nichols, James Fancy, Barss' Corner. Auditors: L. J. Dunn, M. B. DeLong, Barss' Corner..............................

Chester.—President, John A. Webber, Chester; Vice-President, Abner Webber, Chester; Secretary, E. D. Lordley, Chester; Treasurer, James E. Whitford, Chester; Directors: Harry Walker, Freeman Pulsifer, Robert Corkum, Burton Hennigar, Urban Stevens, Chester. Auditors: G. H. Longard, Hezekiah Cook, Chester......................

Farmers.—President, J. Melbourne Wentzell, Parkdale; Vice-President, Nathan Wentzell, Maplewood; Secy.-Treas. H. A. Rufuse, Maplewood. Directors: H. N. Wentzell, G. C. Wentzel, Guy Rafuse, M. E. Spidell, R. B. Wentzell, Maplewood.......................................

Isle of the Sea.—President, Alvin Cross, Tancook; Vice-President, Hezekiah Slaughenwhite, Tancook; Secy., Randolph Stevens, Tancook; Treas. Amos Stevens, Tancook. Directors: Steadman Willinoff, Thomas Hisler, Gabriel Baker, Benjamin Langille, Albert Mason, Tancook. Auditors: Hibbert Baker, Wesley Stevens, Tancook........

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
69	69 00	56 68	New	Society	
45	74 05	59 59	245 51	224 75	20 76
55	60 00	51 51	113 38	109 40	3 98
91	116 00	83 73	346 01	391 74	45 73
32	102 50	75 96	240 83	260 26	19 43
50	50 00	45 75	New	Society	

Lakeside.—President, J. E. Hallamore, New Cornwall; Vice-President, Alden Barkhouse, New Cornwall; Secretary. A. W. Dauphinee, New Cornwall; Treas. Augustus Ernst, New Cornwall. Directors: Esrom Spidell, Widden Joudrey, Amos Daurey, P. W. Thompson, Thos. Spidell, New Cornwall. Auditors: Joshua Robar, Hibbert Hallamore, New Cornwall..

La Have River.—President, Albert Rhodenizer, West Northfield; Vice-President, A. F. Smith, Lower Branch; Secy.-Treas. Wallace Rhodenizer, Bridgewater. Directors: W. K. Cook, Bridgewater; G. A. Crouse, U. S. Keizer, Lower Branch; George Hirtle, Mark Rhodenizer, West Northfield..

Lewiston.—President, Henry I. Meister, Mill Road; Vice-President, Bennett Walker, New Ross; Secy.-Treas., W. E. Hirtle, Mill Road. Directors: Harvey Walker, Will Keddy, H. Walker, John Broom, Wallace Russell, New Ross. Auditors: Chas. Russell, Will Keddy, New Ross

Mahone Bay.—President, H. S. Lane, Mahone; Vice-President, C. A. Hamilton, Mahone; Secy. C. U. Mader, Mahone; Treas. J. H. Mader, Mahone. Directors: Albert Burgoyne, David Slauenwhite, Mahone: George A. Mader, Oron Mader, Mader's Cove; Azom Ernst, Blockhouse.......

Maitland.—President, Chas. Barry, Barry's Corner; Vice-President, J. M. Waterman, Blockhouse; Secy.-Treas. N. W. Eichel, Barry's Corner. Directors: Wallace Sloughen white, Sweetland; Artemas Joudrey, Bridgewater; Archie Barry, Damas Langille, Harris Kaulback, Barry's Corner; Auditors: Ephraim Aulenbach, Archie Barry, Barry's Corner..

Malagash.—President, Adam Knickle, Heckman's Island; Vice-President, R. A. Backman, Lunenburg; Secy.-Treas., Willie J. Anderson, Lunenburg; Directors, Robt Schwartz, Harold Rhodenizer, Alonzo Rhodenizer, Kenneth Crouse, Henry Myra, Lunenburg; Auditors: A. E. L. Fritz, William Emeneau, Lunenburg...................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
42	47 50	44 31	276 28	273 51	2 77
28	130 50	92 08	180 50	183 18	2 68
27	40 00	40 00	151 88	56 00	95 88
167	171 00	115 39	758 09	301 50	456 59
47	57 00	49 78	232 54	219 77	12 77
127	216 00	141 28	674 97	672 10	2 87

Midville Branch.—President, James Synder, Midville; Vice-President, Nathaniel Hebb, Midville, Secy., Jacob Synder, Midville; Treas., Albert Synder, Midville. Directors: Paul Veinot, Albert Snyder, Howard Wentzell, Otto Mailman, Fletcher Hirtle, Midville. Auditors: Stephen Smith, Nathaniel Hebb, Midville. ....

New Ross.—President, H. A. Meister, New. Ross; Vice-President, D. M. Turner, New Ross; Secty.-Treas., W. Edwin Larder, New Ross. Directors: L. H. Meister, Patrick Boylan, John R. Meister, Henry Withrow, Capt. A. M. Ross, New Ross. Auditors: Capt. Ross, Norwood Gates, New Ross..................................

Oak Hill.—President, H. H. Silver, Bridgewater; Vice-President, Whitford Ernst, Bridgewater; Secy.-Treas. Owen G. Dauphinee, Bridgewater. Directors: James Bailey, Chas. Wile, Timothy Whynot, Titus Rhodenizer, Amos Langille., Bridgewater. Auditors: Titus Ramsey, Howard Spidell, Bridgewater................................

Riverside.—President, J. F. Penny, New Germany; Vice-President, Wm. Eisnor, New Germany; Secy.-Treas., D. W. Morton, New Germany. Directors: Raswell Feindel, Joshua Faulkenham, New Germany. Auditors: H. P. Chesley, A. B. Feindel, New Germany....................

Union.—Casper Hirtle, Hemford; Vice-President, John Simpson, Simpson Corner; Secy.-Treas., Herbert Silver, Hemford. Directors: Wm. Veinot, Andrew Russell, David Silver, Rufus Zinck, Geo. Mailman, Hemford.............

United Farmers.—President, Collins Herman, Lunenburg; Vice-President, Joseph Herman, Lunenburg; Secy.-Treas., A. E. L. Fritz, Lunenburg, Directors: Wm. Meisner, Chas. Herman, Joshua Smeltzer, Martin's Brook. Auditors: Howard Baker, Cecil Meisner, Lunenburg.......

Upper Northfield.—President, Asaph MacKay, Upper Northfield; Vice-President, Henry Eickle, Upper Northfield; Secretary, Harry MacKay, Upper Northfield; Treasurer, Joseph MacKay, Upper Northfield. Directors: Stephen Mossman, Stephen Silver, Wm. H. Veinott, Upper Northfield. Auditors, James McKean, Henry Eickle, Upper Northfield...

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Total
42	66 00	54 96	189 17	110 02	79 15
59	62 00	52 66	211 90	139 95	71 95
49	63 75	53 66	150 68	111 75	38 83
44	57 60	50 12	240 09	208 10	31 99
39	48 00	44 60	112 79	75 20	37 59
27	41 00	40 57	New	Society	
41	53 50	47 76	192 41	190 00	2 41

West Northfield.—President, Robert Wentzell, West Northfield; Vice-President, S. M. Ramee, West Northfield; Secy.-Treas., John Langille, West Northfield. Directors: Obed Dauphinee, Albert Feener. Hugh D. Rhodenizer, Mackie Arnberg, Edwin Dauphinee, West Northfield. Auditors: S. M. Ramee, Robert Wentzell, West Northfield.

PICTOU COUNTY.

East River.—President, Jos. H. Grant, Springville; Vice-President, A. McN. Grant, Springville; Secy.-Treas., Sinclair Cameron, Bridgeville. Directors: A. C. McDonald, Simon Fraser, Springville; Smith C. Fraser, George Tait, Bridgeville.......................................

Egerton.—President, Chas. Matheson, Hopewell; Vice-President, D. H. Thompson, Hopewell; Secy. H. D. McLeod, Hopewell; Treasurer, Aubray G. McKay. Directors: Finlay Gray, John Cameron, J. C. McDonald, Mowatt McKay, Hopewell; Sam McKay, Riverton.........................

Lismore.—President, Stephen McDonald, Lismore; Vice-President, John D. McKinnon, Lismore; Secy.-Treas. John H. McDonald, Lismore; Directors: Alex J. McDonald, Roddie McDonald, George McDonald, John M. McDonald, W. C. McKinnon, Lismore. Auditors: John McGillivray, Stephen McDonald, Lismore.........................

Little Harbor.—President, Alex Reid, Little Harbor; Vice-President, D. A. McQueen, King's Head; Secy.-Treas., Alex. McQueen, King's Head. Directors: John R. Reid, James W. Reid, Robert M. McQueen, D. H. Cameron, Little Harbor. Auditors: D. P. McDonald, J. D. Grant, King's Head.......................................

Lyon's Brook.—President, C. D. Gammon, Lyon's Brook; Vice-President, J. R. Hislop, Lyin's Brook; Secy.-Treas., G. Wm. Grant, Lyon's Brook. Directors: A. D. McKay, Peter McInnes, Finlay McIntosh, R. Fullerton, Wm. Brown, Pictou. Auditors: A. D. McKay, Pictou, Peter McInnes, Lyon's Brook.........................

Marshville.—President, J. B. Langille, Marshville; Vice-President, Robt. McKay, Marshville; Secy.-Treas., Calvin M. Langille, Marshville. Directors: Rod McDonald, William Tattrie, Hope W. Langille, Carl A. Langille, A. B. Langille, Marshville. Auditors: Clarence Langille, Jas. I. Langille, Marshville..................................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
28	45 50	43 16	98 28	100 15	*D* 1 87
29	48 00	44 60	289 81	283 36	6 45
37	98 00	73 37	351 79	182 40	169 39
25	48 50	44 89	New	Society	
28	56 00	49 20	221 82	195 98	25 84
29	59 05	50 96	155 46	140 25	15 21
19	50 50	46 04	158 99	105 90	53 09

Maxwelton.—President, George W. McKay, Avondale; Vice-President, Charles R. Smith, Ponds; Secretary, Geo. D. Smith, Ponds; Directors: Alex R. Murdock, Alex. W. Miller, George D. Smith, Ponds; David Patterson, Lower Barney's River..............................

Meadowville.—President, Murdock Murray, Meadowville; Secy.-Treas., James H. Murray, Meadowville. Directors: George E. Fraser, John W. McIntosh, Angus Murray, James Cotter, Meadowville. Auditors: Jas. W. McBain, Wilson McConnell, Meadowville........................

Merigomish.—President, Renwick Forbes, Merigomish; Vice-President, Forrest Finlayson, Merigomish: Secy.-Treas. David Finlayson, Merigomish. Directors: J. W. Dunn, Samuel Cameron, Willard Copeland, W. B. McDonald, Angus Grant, Merigomish................................

Mill Brook.—President, Hector McKenzie, New Gairloch; Vice.-President, Wm. McDonald, Lovat; Secy. A. J. McIntosh, Mill Brook; Treas., Samuel Gordon, Mill Brook. Directors: Wm. H. Fraser, W. S. Fraser, J. L. Munro, Mill Brook; J. W. McDonald, Lovat; David Ferguson, New Gairloch.......................................

Mount Thom.—President W. C. Proudfoot, Salt Springs; Vice-President, W. D. McDonald, Lower Mt. Thom; Secy.-Treas., D. R. Fraser, Lower Mt. Thom. Directors: David Cameron, Chas. Maxwell, Daniel Creighton, Ed. Fraser, J. J. Cameron, Lower Mt. Thom. Auditors: Wm. McKay, J. D. Sinclair, Lower Mt. Thom............

New Glasgow.—President, John W. McDougall, New Glasgow; Vice-President, J. C. Warren Fraser, New Glasgow; Secy.-Treas., James R. Fraser, New Glasgow. Directors: John R. McMillan, Alex Logan, Falconer McDonald, Edwin A. Fraser, Robt. McG. Murray, New Glasgow. Auditors: Don F. Fraser, Peter McFarlane, New Glasgow....

Pictou.—President, W. D. Smith, Pictou; Vice-President, A. McG. Fraser, Pictou, Secy.-Treas., D. Logan, Pictou. Directors: Hugh Sutherland, Mercer Murray, Peter Watt, John McKeil, Gordon McKenzie, Pictou. Auditors: Peter Fraser, E. L. Armstrong, Pictou.........................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
20	46 43	43 70	New	Society	
27	52 75	47 33	170 45	175 57	*D* 5 12
30	40 00	40 00	123 55	102 40	21 15
40	90 00	68 77	237 55	218 90	18 65
20	51 00	46 33	160 49	102 81	57 68
74	115 00	83 16	418 33	347 03	71 30
146	209 00	137 26	2278 52	2120 83	157 69

Pictou Island.—President, Chas. McCallum, Pictoy Island; Vice-President, John W. McDonald, Pictou Island. Secy.-Treas., Lauchie Rankin, Pictou Island. Directors: William McLean, Chas. G. McCallum, George Rankin, Duncan McCallum, Robert McFarlane, Pictou Island. Auditor: Hector McCallum............................

Pine Tree.—President, E. W. Heurtley, Sutherland's River; Vice-President, E. T. King, Sutherland's River; Secy.-Treas., Thos. Beveridge, Pine Tree. Directors: Messrs. Burns, Simmonds, Robertson, Reid and Campbell, Sutherland's River. Auditors: Messrs. Simmonds and Reid, Sutherland's River..................................

River John.—President, J. R. Collie, River John; Vice-President, H. H. Sellars, Hodson; Secy.-Treas., Wm. McGregor, River John. Directors: H. M. Tattrie, James Sellars, Chas. E. Hamilton, River John; John R. Sutherland, Seafoam; William J. McLean, Hedgeville. Auditors: H. M. Tattrie, Chas. E. Hamilton, River John...................

Rocklin.—President, Geo. W. McLeod, Burnside; Vice-President, Geo. T. Ken, Burnside; Secy.-Treas. Ernest Fraser, Rocklin. Directors: John T. Ken, John G. Sutherland, Chas. Jardine, Burnside; Daniel Balfour, Rocklin; Wm. Jardine, White Hill. Auditors: John T. Ken, John G. Sutherland, Burnside....................................

Roger's Hill.—President, John W. Fraser, Scotsburn Station; Vice-President, William E. Murray, Scotsburn Station; Secy.-Treas., W. S. McKean, Scotsburn Station. Directors; John A McKean, John Stewart, Wm. E. Murray, John P. Cotter, Geo. W. McKenzie, Scotsburn Station. Auditors: K. C. Fraser, W. J. Fisher, Scotsburn Station......

Salt Springs.—President, Fred Setchell, Salt Springs; Vice-President, K. A. Murray, Salt Springs; Secy.-Treas. R. A. Robertson, Salt Springs. Directors: J. R. Young, Dan Robertson, Harry Brown, Tom Moreland, Salt Springs.

Scotsburn.—President, Hugh McKay, Scotsburn; Vice-President, Duncan Murray, Scotsburn; Secy.-Treas., D. W. Murray, Scotsburn. Directors: Alex McKay, Alex. McLeod, Robt. Douglas, A. G. Stewart, D. W. Murray, Scotsburn. Auditors: A. H. McKay, Hugh Stewart, Scotsburn.

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
17	40 00	40 00			
28	49 50	45 46	130 34	87 75	42 59
68	135 00	94 67	194 62	162 44	32 18
15	40 00	40 00	139 28	50 38	88 90
22	43 00	41 72	212 12	123 50	88 62
16	46 00	43 45	110 69	143 88	33 19
22	42 00	41 15	168 07	127 10	40 97

Seaview.—President, Daniel R. McGillivray, Dunmaglass; Vice-President, Ronald H. McGillivray, Dunmaglass; Secy.-Treas., Daniel R. McKinnon, Ardness. Directors: Ronald A. McGillivray, Angus B. McGillivray, Angus McEachern, Dunmaglass. Auditor: A. J. McGillivray, Dunmaglass..................................

Strathshield. — President, John McKinnon, Bailey's Brook; Vice-President, Donald W. McLean, Bailey's Brook; Secy.-Treas., Duncan L. McDonald, Bailey's Brook. Directors, Duncan D. McLean, Leonard Day, Donald W. McGillivray, Bailey's Brook; Allen A. McGillivray, Glen Brook; Hugh C. McDonald, Ardness. Auditors: Donald W. McLean, Roderick W. McGillivray, Bailey's Brook........

Toney River.—President, John A. Colquhoun, Toney River; Vice-President, James Elliott, Toney River; Secy.-Treas., D. A. McKenzie, Toney River. Directors: Angus C. Grant, Daniel A. McDonald, Angus L. Henderson, Toney River; Daniel D. McKenzie, John D. Munro, Toney Mills.

Union Centre.—President,, John G. Munro, Union Centre; Vice-President, George Ross, Union Centre; Secretary, Alex. Ross, Box 838, Westville; Treasurer, Warren McKenzie, Union Centre. Directors: John McNeil, J. J. Crawford, Chas. Munro, Duncan Fraser, William Harris, Union Centre. Auditors: Charles Munro, John Crawford, Union Centre..

West Branch.—President, Thos. Harbourn, West Branch Vice-President, J. W. Ross, West Branch; Secy.-Treas. Murdock Sutherland, West Branch. Directors: Hugh R. Ross, Hugh D. McKenzie, Alex W. Murray, Murrayfield; Thos. G. Murray, James Graham, West Branch. Auditors: John R. Murray, Hugh McLean, West Branch............

West River.—President, Aubrey H. Clark, Cen. West River; Vice-President, Frank Cox, Cen. West River; Secy.-Treas., W. O. Creighton, Cen. West River. Directors: Wm. McLean, Geo. Brownrigg, Scot Grant, Geo. Smith, Stewart McLellan, Cen. West River..........................

Westville.—President, William Fraser, Westville; Vice-President, J. T. McQuarrie, Westville; Secy., J. K. McKenzie, Westville; Treas., Alfred McLeod, Westville. Directors: G. Oliver, Joseph Farour, Henry Marshall, James McCoull, M. McLeod, Westville. Auditors: D. Smith, P. C. Munroe, Westville...............................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
20	42 10	41 20	90 68	90 00	68
26	41 60	40 92	New	Society	
19	56 25	49 35	165 14	99 50	65 64
21	44 00	42 30	124 12	130 05	*D* 5 93
44	84 50	65 60	174 07	174 00	07
19	66 00	54 96	263 19	119 00	144 19
40	71 00	57 84	166 15	123 65	42 50

QUEENS COUNTY.

Kempt.—President, M. U. Freeman, Kempt; Vice-President, Spurgeon DeLong, Kempt; Secy.-Treas., H. J. Freeman, Kempt. Directors: Robert Atkins, Ernest Kempton, Samuel Luxton, Kempt, W. P. Freeman, New Grafton. Auditors: Eldridge DeLong, John Dukeshire, Kempt........

Mutual Benefit.—President, F. C. Hunt, North Brookfield; Vice-President, Foeman Roding, North Brookfield; Secy.-Treas., R. F. Weare, North Brookfield. Directors: Stephen Fancy, H. L. Daley, Judson Christopher, Henry Silver, North Brookfield; Sylvanus Wile, S. Brookfield. Auditors: H. L. Daley, Henry Silver, North Brookfield......

North Queens.—President, G. W. Rafuse, Caledonia; Vice-President, J. W. Douglas, Caledonia; Secy.-Treas. B. L. Telfer, Caledonia. Directors: Owen Seldon, Melburne Kempton, H. S. Annis, Wilson Baxter, Zoeth Minard, Caledonia..

South Brookfield.—President, Richard Hunt, South Brookfield; Vice-President, Charles Cameron, South Brook-Brookfield; Secretary, J. Smith, South Brookfield. Directors: W. L. Freeman, J. W. Smith, L. A. Crocker, Charles Spears, Robert Smith, South Brookfield..................

RICHMOND COUNTY.

Arichat.—President, Hon. Isidore LeBlanc, Arichat; Vice-President, Reynolds Smith, Arichat; Secy.-Treas., James D. Power, Arichat. Directors: Cornelius Dunn, Leonard Crowell, M. B. McNeil, John Tyrell, Hector McEachern, Arichat...................................

Grand Anse.—President, D. D. Buchanan, Grand Anse; Vice-President, M. J. McDonald, Grand Anse; Secy.-Treas., Dan A. McRae, Grand Anse; Directors: Murdock McPherson, D. H. McDougall, Dan Ferguson, Grand Anse; John D. Kavanagh, Grandique Ferry; George J. Hill, Balmoral. Auditors: Malcolm McPhail, Murdock McPherson, Grand Anse...

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
38	41 00	40 57	224 65	231 55	*D* 6 90
29	42 50	41 43	176 79	176 79	
36	58 00	50 35	108 46	133 80	*D* 25 34
39	53 50	47 76	217 27	224 89	*D* 7 62
40	40 00	40 00	79 75	87 57	*D* 7 82
28	64 00	53 81	154 39	193 19	*D* 38 80

Grand River.—President, Neil McCuspic, Grand River; Vice-President, A. R. Urquhart, Grand River; Secy.-Treas., Alex. G. McKay, Grand River. Directors: R. C. Matheson, Dan J. Matheson, Geo. J. Matheson, Alex D. McKay, Rod McDonald, Grand River. Auditors: William Kemp, Alex J. McKay, Grand River...........................

Irish.—President, James Johnston, Red Islands; Vice-President, Joseph Cash, Irish Cove; Secy.-Treas., John J. Johnston, Red Islands. Directors: Martin Johnston, James Joseph Johnston, Hay Cove; James C. D. Johnston, Michael D. Johnston, Peter Campbell, Red Islands...............

Soldiers' Cove.—President, R. L. McDonald, St. Peter's; Vice-President, J. J. McDonald, Soldiers' Cove, Secy.-Treas. Stephen T. Thomas, Soldiers' Cove. Directors: Alex McDonald, Wm. McDonald, Allan H. McDonald, Wm. Sutherland, John F. Gillis, Soldiers' Cove. Auditors: Peter McKenzie, Martin Gillis, Soldiers' Cove............

West Bay.—President, Peter Dunphy, St. George's Channel; Vice-President, Duncan J. McRae, St. George's Channel; Secretary, F. C. Cotton, St. George's Channel; Treasurer, Peter Dunphy, St. George's Channel. Directors: William Campbell, Points' West Bay; Benj. McKenzie, W. H. Ross, John D. McRae, W. S. Urquhart, St. George's Channel. Auditors: Dan Cameron, John W. McRae, St. George's Channel...................................

SHELBURNE COUNTY.

Barrington Passage.—President, D. Sargent, Barrington Passage; Vice-President, T. W. Robertson, Barrington Passage; Secy.-Treas., F. W. Sargent, Barrington Passage; Directors: J. R. Gammon, Gilbert Crowell, W. L. Smith, J. H. Christie, Geo. W. Smith, Barrington Passage. Auditors: D. Sargent, Geo. W. Smith, Barrington Passage...........

Granite.—President, A. M. Wilson, Barrington; Vice-President, L. Davis, Barrington; Secy., Stanley Doane, Barrington; Treas., Joseph Hipson, Barrington. Directors: J. McMullen, L. Davis, J. Homer, W. H. Doane, J. McKenna, Barrington. Auditors: J. Homer, F. Watt, Barrington..

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
20	40 00	40 00	172 96	112 26	60 70
16	40 00	40 00	80 00	76 00	4 00
18	47 00	44 02	102 86	57 89	44 97
22	43 00	41 72	134 94	123 05	11 89
45	61 50	52 37	242 76	172 10	70 66
58	58 00	50 35	100 44	82	99 62

Shelburne.—President, Howard A. Harris, Welshtown; Vice-President, Lorenzo Jones, Upper Ohio; Secy.-Treas.-Wm. K. Hood, Shelburne, Shelburne. Directors: Henry Bower, Lower Ohio; L. O. Fuller, W.. I. Farquhar, Edmund L. Bower, Shelburne; Wm. E. Holden, Jordan. Auditors: F. C. Blanchard, Angus Swansburg, Shelburne............

VICTORIA COUNTY.

Baddeck Bridge.—President, D. F. McRae, Baddeck Bridge; Vice-President, A. C. Cain, Cain's Box; Secy.-Treas., A. F. McRae, Nynaza; Directors: Angus McCharles, F. A. McRae, Baddeck Bridge; H. G. Matheson, Neil C. McIver, Hunters' Mountain. Auditor: J. A. McDonald, Cain's Box...................................

Baddeck Valley.—President, James T. Kelley, Baddeck Forks; Vice-President, Rev. J. McNeil, Baddeck Forks; Secy.-Treas., M. R. McLeod, Baddeck Forks. Directors: William McKenzie, Duncan Buchanan, E. P. Rice, Alex McAuley, Frank Ross, Baddeck Forks. Auditors: J. T. Kelly, Rev. J. McNeil, Baddeck Forks........................

Lake View.—President, James C. McDonald; Vice-President, Geo. R. Anderson, Baddeck; Secy.-Treas., John E. Campbell, Baddeck. Directors: E. G. McAskill, A. Y. McDonald, A. S. McDonald, Henry Crowdis, Angus McLeod Baddeck.....................................

Middle River.—President, Forbes McDonald, Middle River; Vice-President, Dan McDonald, Middle River; Secy.-Treas., D. McLennan, Upper Middle River. Directors, Rory J. McRae, Kenneth Finlayson, Rory D. McLeod Tom McDonald, J. A. McDonald, Upper Middle River.....

St. Ann's.—President, John M. Buchanan, South Gut; Vice-President, A. G. Morrison, South Gut; Secy., Duncan Smith, South Gut; Treas., John A. McLeod, North Gut. Directors: Murdock Matheson, Glen; J. C. McLeod, Neil D,? Carmichael, John A. McLeod, South Gut...............

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Balance.
107	107 00	78 55	1035 53	957 04	78 49
23	46 00	43 45	75 09	45 80	29 29
25	50 00	45 75	164 75	128 69	36 06
24	48 00	44 60	123 75	72 25	45 50
16	40 00	40 00	264 85	208 05	56 80
19	40 00	40 00	124 00	5 00	119 00

YARMOUTH COUNTY.

Brookside.—President, John Smith, East Pubnico; Vice-President, Ebben Nickerson, East Pubnico; Secy.-Treas., Chas. S. Wyman, East Pubnico. Directors: Henry D'Entremont, Arthur D'Entremont, Loran Smith, Edwin Goodwin, George Fox, East Pubnico.........................

Kempville.—President, Edgar A. Hurlburt, N. Kemptville; Vice-President, Arthur Roberts, Kemptville; Secy.-Treas., A. M. Gates, Kemptville. Directors: David Randall, Solomon Roberts, N. Kemptville; Silvanus Crowell' E. Kemptville...............................

Yarmouth Central.—President, Roy C. Wyman, Pleasant Valley Corner; Vice-President, Emory E. Porter, Pleasant Valley Corner; Secy.-Treas., Geo. C. Killam, Pleasant Valley. Directors: S. F. Killam, Pleasant Valley; Everett Gray, Pleasant Valley Corner; L. E. Crosby, T. W. Roberts, Alvin A. Crosby, Deerfield..........................

Yarmouth County.—President, E. K. Spinney, Yarmouth; Vice-President, S. A. Cook, Yarmouth; Secy.-Treas., Wm. Corning, Yarmouth. Directors: L. A. Lovett, J. M. Porter, J. F. Palmer, John Corning, Walter Churchill, Yarmouth. Auditors: W. A. Godfrey, W. M. Kelley, Yarmouth

Yarmouth Township.—President, Moses Harris, Hebron; Vice-President, John McCormick; Secy., W. A. Church ill, Lakeside; Treas., Asa Porter, Hebron Directors: Lyman Moses, Thos. Moses, Chas. Rogers, E. McCormick, C. A. Porter, Hebron..............................

Number of Members.	Amount Subscribed.	Grant in Aid.	Total Receipts.	Total Expenditure	Total
40	58 50	50 64	354 12	253 05	101 07
90	205 00	134 95	327 52	270 50	57 02
18	41 00	40 57	181 54	136 09	45 45
595	616 00	250 00	5134 57	4043 97	1090 60
57	140 00	97 55	406 16	47 70	358 46

REPORT OF STANDING FIELD CROPS COMPETITION FOR 1914.

The results of the Field Crops Competition in this Province for the past season were highly satisfactory.

In addition to a vast improvement in quality, there was a large increase in entries in all classes. The increase in oats and potatoes over 1913 amounted to 17%, and in wheat 14%.

For wheat and oats, there was a competition in each County, making five or more entries. For potatoes, the Province was divided into four districts. The minimum number of prizes offered was four, where there were only five entries, and the maximum was twenty, where there were thirty or more entries. Prizes were paid according to the number of points scored, the rate being thirty cents per point for all points above sixty-five, our idea being that no field scoring below that number of points, was worthy of a prize.

The total amount of money paid in prizes was $1382.75 divided among the competitions as follows:

Oats	$796.93
Wheat	360.09
Potatoes	225.73

The highest score in the oats competition was 95.3, and the lowest 62.5. Eighteen per cent, of the scores made were 90, or over, while only twelve per cent. were below 70. In the wheat competition, the highest score was 94, and the lowest 65. Only 2½% of the scores were below 70, while 25½% was 90 or over. In the potato competition, one field scored as high as 97, while the lowest was 72. Twenty-eight of the fields scored above 90, while only 14% scored below 80.

The judging in the district in which Lunenburg was included was done by myself, and I found it difficult to score the first prize field three points below a possible score. The first, second, third and fourth prize fields in district No. 2 were won by entries from Lunenburg County, and a better lot of fields of potatoes I have never seen. They were all sprayed with Bordeaux mixture, at least twice, some three, and the first prize field, four times.

In the report of the Lunenburg County Farmers' Association the President, in summing up crop consitions in that County, pointed with pride to the fact that the County had won the first four places in the potato competition for their district, and went on to say that the first prize field, containing just two acres, had yielded 970 bushels, and that the other prize winning fields had yielded more than 400 bushels per acre. The President, to a large degree, attributed the improved crops to encouragement given through "Field Crops Competitions." As stated last year, the benefits of competitions are, by no means, confined to the competitors. They have been the means of establishing the value of good seed, and made it possible for farmers to get an article which can be relied upon.

On the following pages, a full list of the competitors, together with their detailed scores, is given.

It is hoped, by noting the points wherein they failed, they may take the precautions which will make them winners next year.

Respectfully submitted,

F. L. FULLER.

WHEAT.

ANNAPOLIS COUNTY.

Name of Competitor	Address	Variety.
V. B. Leonard.........	Clarence........	Red Fife........
Arthur Phinney........	Paradise.........	White Russian...
T. C. Smith..........	Clarence........	Marquis........
C. G. Foster...........	Clarence........	Red Fife........
Eldon Marshall........	Clarence........	Marquis.........

ANTIGONISH COUNTY.

Name of Competitor	Address	Variety.
Alex. G. Chisholm......	North Grant.....	Red Fife........
D. W. Grant...........	Heatherton......	Red Fife........
Ronald Chisholm.......	Glen Road.......	White Russian...
Dan McFarlane........	Briley's Brook...	White Russian...
P. D. Hanrahan........	Fairmont........	White Russian...
D. M. Cameron.......	Fairmont.......	White Russian...
Alex. D. Chisholm......	Lanark..........	White Russian...
Angus R. Boyd........	Cribbens Pt.....	White Russian...
John McGillivray......	South Side Cape..	White Fife.......
Crockett Bros..........	Antigonish.......	Red Fife........
Jas. Dunn.............	L. South River...	White Russian...
Ronald Chisholm.......	Antigonish.......	White Russian...

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
5	10	5	25	10	20	20	5	100
4.75	9.	4.75	23.	9.5	19.	18.	5.	93.
4.	8.	4.5	23.	8.5	18.	16.5	4.5	87.
3.5	7.5	4.5	20.	8.	18.	15.5	4.	81.
4.	7.5	4.	17.	7.	12.	14.5	4.	70.
3.	7.	4.	15.	7.	15.	10.	4.	65.
4.75	9.25	4.5	23.	8.25	19.5	18.5	4.75	92.5
4.5	8.	4.5	23.	7.5	20.	19.	4.75	91.25
4.5	8.25	4.75	22.	9.50	19.50	18.	4.75	91.25
4.75	7.5	4.5	23.	10.	18.	17.	4.25	89.
4.75	9.25	4.5	22.	9.75	15.	18.5	4.75	88.5
4.5	8.	4.75	21.	9.75	17.	18.5	4.75	88.25
4.5	7.	4.25	23.	8.	18.25	18.5	4.5	88.
4.75	9.5	3.5	22.	8.25	17.	18.	4.75	87.75
4.5	7.5	4.5	23.	10.	18.	15.	4.75	87.25
4.5	8.	4.5	22.	9.5	16.5	17.5	4.75	87.25
4.5	7.5	4.5	20.	9.	19.50	17.	4.75	86.75
4.5	8.	4.5	23.	8.	17.	17.	4.5	86.5

Name of Competitor	Address	Variety.
Angus J. McNeil........	Malignant Cove..	White Russian...
Colin McNeil..........	Fairmont........	White Russian...
Alex. J. Chisholm......	West River......	White Russian...
Ronald A. Boyd.......	Cribbens Pt......	White Russian...
Mrs. Allen Ross........	North Grant.....	Red Fife........
P. J. Hanrahan........	Fairmont........	White Russian...
Alex. McPherson.......	Cloverdale.......	White Russian...
Allan McDonald.......	Lanark..........	White Russian...
Rod Chisholm.........	S. Side Harbour..	Red Fife........
John Grant............	Briley's Brook...	White Russian...
John W. MacDonald...	Briley's Brook...	White Russian...

CAPE BRETON COUNTY.

Name of Competitor	Address	Variety.
John McMullen........	George's River...	Red Fife........
Joseph C. Kelly........	George's River...	White Russian...
Rod McLeod..........	Groves Point....	White Russian...
E. J. Johnson..........	George's River...	White Russian...
A. W. Gillis...........	George's River...	White Russian...

COLCHESTER COUNTY.

Name of Competitor	Address	Variety.
J. R. Semple...........	Brule...........	Red Fife.
J. L. Cunningham......	Bayhead........	White Russian...

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.75	9.	4.5	22.	9.5	15.	17.	4.5	86.25
4.5	9.25	4.	21.	9.	17.	17.	4.25	86.
4.5	8.5	4.25	22.	10.	14.	18.	4.5	85.75
4.5	7.25	4.5	24.	9.	16.	15.	4.75	85.
4.5	7.	4.25	23.	10.	14.	16.	4.75	83.5
4.5	7.5	4.	21.	8.5	17.5	16.	4.25	83.25
4.75	7.	4.5	21.	10.	15.	16.	4.5	82.75
4.75	9.5	4.5	24.	9.5	6.	19.	4.5	81.75
4.5	9.	3.5	18.	9.	15.	18.	4.5	81.5
4.25	7.5	4.	15.	9.75	15.	19.	4.25	78.75
4.25	7.	4.75	18.	7.5	17.	15.	4.75	78.25
4.5	9.	4.	23.	10.	19.	18.	5.	92.5
4.	9.	5.	23.	10.	18.	18.	5.	92.
5.	9.	5.	23.	10.	16.	18.	5.	91.
4.	8.	5.	24.	10.	18.	15.	5.	89.
4.	9.	4.	20.	10.	17.	18.	5.	87.
5.	9.75	4.75	24.5	9.	20.	16.5	4.5	94.
4.5	9.5	5.	24.	9.	20.	17.	4.75	93.75

Name of Competitor	Address	Variety.
R. D. McKay	Balmoral Mills	Red Fife
John Murray	Balmoral Mills	Red Fife
Wilmot L. Fulton	Lower Stewiacke	White Fife
George K. McKay	Balmoral Mills	Red Fife
Alex. Ross	East Earltown	Red Fife
Jas. R. Hogan	Denmark	White Russian

CUMBERLAND COUNTY.

Name of Competitor	Address	Variety.
L. Gordon Stevens	Wallace Grant	Unknown
W. L. McFarlane	Fox Harbor	Red Fife
C. C. McFarlane	Fox Har. Point	Red Fife
Fred S. Black	Amherst	Marquis
W. B. Hurd	Wallace Station	Unknown
W. G. Oulton	Lorneville	White Fife
W. W. Wood	Maccan	Marquis
M. B. Harrison	Maccan	Marquis

INVERNESS COUNTY.

Name of Competitor	Address	Variety.
John A. McDonald	Judique	White Russian
Rev. D. McPherson	Glendale	White Russian
Alex. Cameron	Beatonville	White Russian
A. J. Campbell	Beatonville	White Russian

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.	9.	4.75	24.	9.	20.	16.5	4.	91.25
4.5	9.5	4.1	21.25	10.	20.	17.	4.75	91.
4.5	9.	5.	23.	9.	17.5	17.	4.5	89.5
4.	9.	4.	21.	9.5	20.	17.	4.5	89.
4.	7.5	5.	21.	10.	19.25	16.5	4.75	88.
4.	8.5	4.5	23.	9.5	18.	16.	4.5	88.
3.6	8.5	3.5	23.	8.2	18.	17.3	4.3	86.4
4.5	9.	4.	19.	8.5	19.	17.5	4.5	86.
4.5	8.	3.	20.	8.	19.5	16.	4.5	83.5
4.2	8.	3.6	21.	9.	15.	17.	4.	81.8
4.	7.8	4.	20.	8.5	15.	17.	4.	80.3
3.7	7.8	3.7	18.	9.	15.	17.	3.8	78.
3.	7.	3.	18.	8.	17.8	13.	3.	72.8
3.5	7.5	3.	15.	7.	13.	15.	3.2	67.2
4.	9.	5.	24.	10.	17.	17.	5.	91.
4.	8.5	5.	23.	10.	18.	17.	5.	90.5
4.	8.	4.	23.	9.	20.	16.	4.	88.
4.	8.	5.	20.	10.	20.	16.	4.	87.

Name of Competitor	Address	Variety.
Angus C. Campbell.....	Genora Falls.....	White Russian...

HALIFAX COUNTY.

J. D. Ogilvie...........	Elderbank.......	Red Fife........
Adams Archibald.......	M. Musquodoboit	White Russian...
R. Kaulback...........	M. Musquodoboit	Red Fife.........
A. D. Burris...........	U. Musquodoboit	Red Fife.........
Roy McCurdy.........	M. Musquodoboit	White Fife.......
Chas. Logan...........	M. Musquodoboit	White Fife......
A. D. Deane...........	Dean...........	Red Fife.........

HANTS COUNTY.

O. G. Walley..........	Newport........	White Fife.......
Job Sanderson.........	Scotch Village....	White Russian...
James Bell............	Shubenacadie....	White Fife.......
William O'Brien.......	Windsor Forks...	Red Fife........
J. A. Reynolds.........	Newport........	Red Fife.........
Aubrey J. Smith.......	Falmouth.......	White Russian...
Fred Lawrence.........	Newport........	Red Fife........
J. R. Hansen..........	Farmouth.......	Red Fife........

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.	9.	4.5	20.	9.	17.	17.	5.	85.5
5.	10.	4.5	24.	8.	20.	17.	5.	93.5
5.	10.	5.	23.	8.	16.	18.	5.	90.
4.5	8.	5.	22.	9.5	18.	15.	4.	86.
5.	10.	5.	24.5	8.	10.	18.	5.	85.5
4.5	10.	4.5	22.	8.	12.	18.	5.	84.
4.5	10.	5.	24.	7.	12.	16.	5.	83.5
5.	10.	5.	23.	9.5	10.	15.	5.	82.5
5.	10.	5.	23.	10.	16.	17.	5.	91.
4.5	9.5	5.	23.	9.75	17.	17.	5.	90.75
4.75	9.75	5.	22.	10.	16.5	17.	4.75	89.75
4.75	9.5	5.	19.	10.	18.	17.5	4.5	88.25
4.5	9.	5.	21.	9.5	17.	17.	5.	88.
4.	7.5	4.75	21.	10.	18.5	16.	4.75	86.5
3.5	9.	5.	20.	9.	18.	16.	5.	85.5
4.	8.	4.5	18.	10.	16.	17.	4.75	82.25

PICTOU COUNTY.

Name of Competitor	Address	Variety.
Arthur Wallace........	Pictou..........	Unknown.......
F. McDonald..........	New Glasgow....	Unknown........
James Maxwell.........	Durham.........	White Russian...
C. W. Langille.........	Marshville.......	White Russian...
Ross Bros.............	Bayview........	White Russian...
Alex McKay...........	Pictou..........	Unknown........
Calvin Langille.........	Marshville.......	Unknown........
Peter McInnis.........	Lyon's Brook....	White Russian...

RICHMOND COUNTY.

James D. Calder.......	St. George's Ch'l.	White Russian...
Murdock McInnis......	St. George's Ch'l.	White Russian...
William H. Ross........	St. George's Ch'l.	White Russian...
Benj. McKenzie........	St. George's Ch'l.	White Russian...
Mrs. D. McInnis.......	St. George's Ch'l.	White Russian...

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.5	9.2	4.3	24.	9.	19.	18.	4.6	92.6
4.3	9.	4.5	23.4	9.5	19.	18.	4.7	92.4
4.5	9.	4.2	23.4	8.3	17.8	17.8	4.8	89.8
4.4	8.2	4.	23.5	8.	18.	17.7	5.	88.8
4.	8.	4.	23.3	9.	18.	18.	4.3	88.6
4.	8.	3.8	23.	8.	15.	17.8	4.	83.7
4.5	9.	4.	22.	7.	15.5	16.	4.	82.
3.8	7.8	3.	20.	8.	15.	15.	3.8	76.4
4.	7.5	4.5	17.5	9.	15.	17.	4.9	79.4
4.5	8.2	4.5	18.7	9.	14.	15.	4.9	78.8
4.2	8.	4.2	18.7	9.	14.	15.	4.9	78.
4.5	8.	4.5	16.2	9.	13.	17.	4.9	77.1
4.	6.5	4.	17.5	9.5	12.	17.	4.9	75.4

OATS.

ANNAPOLIS COUNTY.

Name of Competitor	Address	Variety.
V. B. Leonard	Clarence	Banner
L. W. Elliott	Clarence	Banner
A. W. Phinney	Paradise	Banner
E. J. Elliott	Clarence	Banner
Eldon Marshall	Clarence	Garton's Abund.
T. C. Smith	Clarence	Derby
C. G. Foster	Clarence	Banner, etc.

ANTIGONISH COUNTY.

Taylor Bros	Antigonish	Banner
Crockett Bros	Antigonish	Banner
Wm. C. MacKintosh	L. South River	Banner
Thomas Hogan	Harbour Road	Banner
Jas. Dunn	L. South River	Banner
D. R. Henderson	Copper Lake	Banner
Cameron Chisholm	Saltsprings	Danish Island
John A. McDonald	Maryvale	Banner
D. W. Grant	Heatherton	Banner
Alex. J. Chisholm	West River	Banner
Thomas Cassigan	Upper Ohio	Banner
Ronald Chisholm	Glen Road	Banner

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.5	9.	5.	23.	9.	19.	18.5	4.5	92.5
4.25	9.	4.5	23.	9.	17.	18.	4.25	89.
4.	8.5	4.5	23.	9.	17.	17.	4.5	87.5
4.	8.	4.5	22.	8.5	18.	17.	4.5	86.5
4.	8.5	4.5	22.	8.5	18.	16.	4.	85.5
4.	7.5	4.5	23.	8.5	17.5	14.5	4.	84.5
4.	8.	4.5	21.	6.	15.	16.	4.	78.5
4.5	9.	4.5	25.	8.	20.	18.	4.5	93.50
4.75	8.	4.75	23.	9.5	19.75	18.5	4.5	92.75
4.75	9.	3.5	23.50	8.75	20.	18.75	4.	92.25
4.5	9.5	4.5	23.	9.	18.5	18.5	4.25	91.75
4.5	8.25	4.5	23.	9.5	20.	18.	4.	91.75
3.75	8.5	4.5	22.	9.75	20.	18.5	4.5	91.5
4.75	8.	4.5	24.	9.25	19.	18.	4.	91.5
4.75	7.	4.25	22.	10.	20.	18.	4.75	90.75
4.75	8.	4.5	23.	9.	17.	19.	4.75	90.
4.5	7.	4.5	23.25	9.75	20.	16.	4.75	89.75
4.75	8.	4.5	23.	9.5	17.	18.	4.75	89.5
4.75	7.5	4.5	23.	10.	20.	15.	4.5	89.25

Name of Competitor	Address	Variety.
Alex. C. Chisholm......	North Grant.....	Banner..........
Albert H. McGregor....	U. South River...	Banner..........
John J. Ingles..........	N. Lochaber.....	20th Century....
D. L. Gillis............	Doctor's Brook...	Egyptian........
Mrs. Allen Ross........	North Grant.....	Banner..........
Alex. H. MacPherson...	U. South River...	Banner..........
D. M. Cameron........	Fairmont........	Island Black.....
Dougald Cameron......	Loch Katrine....	Storm King......
Alex. MacPherson......	Cloverville.......	Banner..........
John MacGillivray.....	South Side Cape..	Banner..........
R. H. Cameron.........	Glenalpine.......	Sensation........
Ronald Chisholm.......	Antigonish.......	Banner..........
Thomas Grant..........	Antigonish......	Banner..........
Thomas McAnnis......	Antigonish.......	Banner..........
John P. McNeil........	Lanark..........	Banner..........
John V. MacPherson....	U, South River...	Banner..........
John J. Keating........	Lochaber........	20th Century....
John W. McDonald.....	Briley's Brook...	Banner..........
John C. MacIntosh.....	Dunmore........	Sensation........
Angus Gillis...........	Pleasant Valley...	White...........

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.75	8.	4.5	21.25	8.	20.	18.	4.5	89.
4.75	7.5	3.5	24.	9.5	19.5	16.5	3.5	88.75
4.	8.5	4.5	23.	8.5	18.	17.5	4.5	88.5
4.5	9.5	3.5	22.	9.5	18.	17.	4.5	88.5
4.5	7.5	2.	24.	9.5	20.	16.	4.75	88.25
4.75	8.75	4.	22.	8.5	18.75	16.5	4.5	87.75
4.25	7.	4.5	24.	9.5	18.	16.	4.25	87.5
4.75	8.	3.5	24.5	9.25	17.	15.	4.75	87.25
4.75	6.	3.	22.	9.5	20.	16.75	4.75	86.75
4.	8.	3.	22.	9.	19.	17.	4.75	86.75
4.5	7.	2.5	24.	9.5	17.5	17.	4.75	86.75
4.75	8.	4.5	21.	6.	20.	18.	4.25	86.5
4.5	8.	4.5	23.	9.	15.	18.	4.5	86.5
4.75	9.	4.	23.	9.	15.	17.	4.5	86.25
4.5	8.	4.5	23.	8.	15.	18.	4.	85.
4.25	9.	1.	24.	9.	16.	17.	4.75	85.
4.5	7.	3.5	20.	9.	20.	16.	4.5	84.5
4.5	7.	4.	19.75	9.75	19.	16.5	4.	84.5
4.25	7.5	4.75	23.	9.	15.	16.	4.25	84.25
4.75	7.	4.5	18.	9.	19.	17.	4.75	84.

Name of Competitor	Address	Variety.
Rod Chisholm	S. Side Harbour	Banner
Alex. R. McAdam	Malignant Cove	Egyptian
Duncan McKenzie	Doctors' Brook	Banner

CAPE BRETON COUNTY.

Name of Competitor	Address	Variety.
Joseph Campbell	Big Pond Centre	Banner
John McMullen	George's River	Banner
Murdock McLellan	Big Pond Centre	Banner
Hugh McKinnon	Groves Point	Island Black
Allan Morrison	Big Pond	Banner
Rod McLeod	Groves Point	Island Black

COLCHESTER COUNTY.

Name of Competitor	Address	Variety.
Blair Cutten	Lower Truro	Banner
G. Burrows	Murrays Crossing	Early Blossom
J. R. Semple	Brule	Banner
Wilmot L. Fulton	Lower Stewiacke	Banner
R. D. McKay	Balmoral Mills	Banner
J. L. Cunningham	Bayhead	Banner
John Murray	Balmoral Mills	Banner
Alex. Ross	East Earltown	Abundance
George Retson	Brookside	Danish Island

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.75	9.25	4.	21.5	9.5	12.	19.	4.	84.
4.	8.	2.	22.	9.	17.	15.	3.	80.
4.75	9.5	3.5	20.	7.	12.	16.	4.75	77.5
4.	9.	4.5	23.	9.5	20.	18.	5.	93.
5.	9.	4.	24.	9.	19.	18.	4.	92.
4.	9.	4.5	23.	10.	19.	17.	4.	90.5
4.	9.	4.	24.	10.	18.	17.	4.	90.
4.	9.	4.5	23.	9.	17.	18.	5.	89.5
5.	8.5	4.	23.	10.	17.	16.	4.	87.5
5.	9.5	5.	24.	10.	18.5	17.5	4.5	94.
4.5	8.5	5.	24.	9.5	19.75	17.	4.5	92.75
5.	9.	5.	23.	9.	20.	17.	4.	92.
4.75	9.	5.	23.	9.5	19.	17.	4.5	91.75
4.	8.5	4.5	24.	10.	20.	16.5	4.	91.5
4.	8.25	5.	23.5	9.5	20.	17.	4.	91.25
4.75	9.	5.	24.	9.	20.	16.	3.25	91.
4.	8.	5.	24.	9.	20.	16.5	4.	90.5
5.	9.25	3.25	22.	9.75	19.75	17.	4.25	90.25

Name of Competitor	Address	Variety.
A. B. Cunningham	Tatamagouche	Banner
CUMBERLAND.		
W. G. Oulton	Lornville	Banner
C. C. McFarlane	Fox Harbor Pt.	Banner
W. L. McFarlane	Frx Harbor Pt.	Banner
J. A. McFarlane	Fox Harbor Pt.	Ligowe
Harry Brown	Wallace Bay	Banner
Fowler Bros.	Amherst Point	Banner
S. A. Logan	Amherst Point	Banner
John R. Harrison	Maccan	Banner
W. W. Wood	Maccan	Banner
Hebert J. Atkinson	Maccan	Banner
GUYSBORO COUNTY.		
A. T. McBain	New Town	Banner
Ronald McIssac	Giants Lake	Banner
Arthur J. Sinclair	Goshen	20th Century
Angus D. McIsaac	Lakedale	Banner
Edward F. Sinclair	Goshen	Banner
A. F. McNaughton	Goshen	Banner
John A. Sinclair	Goshen	Banner

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.5	8.	5.	23.	9.	20.	16.	4.75	90.25
4.	8.	3.5	23.	9.	19.	17.7	4.8	89.
4.9	8.5	3.	23.5	7.5	19.5	18.	8.5	88.4
5.	7.	4.	23.5	8.	19.	16.	3.5	86.
3.4	8.	4.	20.	8.	19.5	17.5	3.4	83.8
3.	7.	4.	22.	8.	19.5	15.	3.5	82.
4.	7.8	3.5	22.5	8.	15.8	16.5	3.8	81.9
4.	7.	3.	21.	8.	17.8	16.	3.8	80.6
4.	7.5	4.	22.	7.	16.	15.	3.8	79.3
3.	5.	2.8	20.	7.	16.	13.	3.	69.3
3.	7.	3.	23.	7.	10.	13.	3.	69.
4.5	7.	4.5	23.	9.	20.	14.	5.	87.
4.5	8.	4.5	22.	8.	19.	14.	4.5	8.45
4.5	8.	4.	23.	8.75	17.	15.	4.	84.25
4.5	7.	4.5	24.	9.	18.	14.	4.5	83.5
4.	7.	4.5	23.	8.	17.	15.	4.5	83.
4.5	7.	4.5	24.	9.	14.	14.5	4.5	81.5
4.	7.	4.5	22.	9.	18.	12.	4.5	81.

Name of Competitor	Address	Variety.
Harry Sinclair	Goshen	Banner
John Wall	Goshen	Tartar King
Dan McDonald	South Lochaber	Black Tartarian
T. A. Sinclair	Goshen	Banner
Jas. McIntosh	Goshen	Tartar King
William McDonald	South Lochaber	Tartar King
D. N. Cameron	New Town	Tartar King

HALIFAX COUNTY.

Name of Competitor	Address	Variety.
Robert McCurdy	M. Musquodoboit	Banner
J. D. Ogilvie	Elderbank	Banner
Robert Kaulbach	M. Musquodoboit	Banner
A. D. Dean	Dean	Banner
A. D. Burris	U. Musquodoboit.	Banner
M. H. Guild	M. Musquodoboit	Banner
Aubrey Archibald	C. Musquodoboit	Banner
Adams Archibald	M. Musquodoboit	Unknown
E. A. Stewart	C. Musquodoboit.	Island White

HANTS COUNTY.

Name of Competitor	Address	Variety.
William Sharp	Windsor	Banner
Harris Shaw	Windsor Forks	Banner

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.	7.	4.	23.	8.	16.	14.	4.5	80.5
4.5	8.	4.	24.	9.	8.	17.	4.5	79.
4.	7.	4.5	22.	9.	16.	10.	4.	76.5
4.	7.	4.75	23.5	9.	11.	12.	4.5	75.75
4.5	8.	5.	24.	9.	8.	12.	4.5	75.
4.	7.	9.	24.	9.	10.	12.	4.	75.
3.5	6.	4.5	20.	9.	18.	9.	3.	73.
5.	9.5	4.5	24.	9.	20.	18.	5.	95.
5.	9.	4.	24.	10.	19.25	18.	4.	93.25
4.5	8.	4.5	24.	10.	20.	16.	4.5	91.5
5.	9.	5.	24.	8.	17.	16.	5.	89.
5.	9.5	4.5	24.	8.	12.	18.	5.	86.
4.75	9.5	3.25	21.	7.	18.	17.5	4.5	85.5
4.5	9.	4.5	24.5	8.	13.	16.	4.5	84.
4.5	7.	4.5	24.	8.5	15.	15.	4.5	83.
4.5	9.	5.	24.	6.	13.	16.	4.5	82.
5.	10.	5.	23.5	9.75	17.	18.	5.	93.25
4.5	9.	5.	23.	9.75	19.	18.	4.5	92.75

Name of Competitor	Address	Variety.
Daykeyne Farm........	Falmouth........	Banner..........
Palmer Brothers........	Windsor Forks...	Banner..........
Campbell McNeil......	Windsor.........	Banner..........
James Bell.............	Shubenacadie....	Banner..........
J. R. Hansen...........	Falmouth........	Banner..........
Percy Cochrane........	Scotch Village....	20th Century....
Aubrey J. Smith........	U. Falmouth.....	Banner..........
Edgar Cox.............	Sterling Brook...	Banner..........
H. A. Stewart..........	Shubenacadie....	Banner..........
O. G. Walley...........	Newport.........	Unknown........
Nelson Casey..........	Newport.........	Banner..........
Fred Lawrence.........	Newport.........	Century.........
J. A. Reynolds.........	Newport.........	20th Century....
William Sangster.......	Falmouth........	Banner..........
William O'Brien........	Windsor Forks...	Unknown........
INVERNESS COUNTY.		
John A. McDonald.....	Judique.........	Black Tartarian..
Hugh McPherson.......	Mabou..........	Great Dane......
A. J. Campbell.........	Beatonville......	Banner..........
A. T. Beaton...........	Brook Village....	Banner..........

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.25	9.	4.75	24.	9.	19.5	16.5	4.75	91.75
4.75	8.5	5.	23.	8.5	19.5	17.5	5.	91.75
5.	9.	5.	23.	10.	17.5	17.5	4.5	91.5
4.	9.	5.	24.5	9.	20.	16.	4.	91.5
5.	10.	4.	22.	9.	19.	17.5	4.75	91.25
4.5	8.5	5.	24.	7.5	20.	16.5	4.5	90.5
4.75	8.	4.75	23.	9.	19.	17.	4.75	90.25
4.75	9.	5.	23.	8.	18.	17.	5.	89.75
4.5	8.5	3.5	23.	9.	19.5	17.	4.5	89.5
4.5	8.	5.	24.5	8.	18.	16.5	5.	89.5
4.	8.5	4.5	22.	9.	18.5	16.	5.	87.5
4.5	9.	4.75	22.	6.	19.	17.	5.	87.25
4.	8.5	5.	23.	7.	17.	17.	4.5	86.
4.	7.5	4.5	23.	9.	18.	14.	4.5	85.5
5.	8.5	4.75	14.	9.5	19.	17.	4.75	82.5
5.	9.	5.	24.	9.5	19.	18.	4.	93.5
4.	9.	5.	24.	10.	19.	17.	5.	93.
5.	9.	4.	22.	9.5	20.	18.	5.	92.5
4.	9.	5.	22.	10.	20.	17.5	5.	92.5

Name of Competitor	Address	Variety.
Peter McDaniel........	Margaree Forks..	Goldfinder.......
A. Scott McDonnell.....	Port Hood.......	Banner..........
Patrick N. Tompkins....	East Margaree...	Banner..........
Lanch McKinnon......	Margaree Harbor	Banner..........
Dougall Campbell......	Margaree Forks..	Banner..........
Peter H. Chaisson......	Margaree Forks..	Great Dane......
D. F. Beaton...........	Beatonville......	White Wave.....
Wm. McLean..........	North Ainsley....	Banner..........
Ed. Smith.............	Blackstone......	Banner..........
Alex. Campbell.........	Beatonville......	Banner..........
Thos. A. McNeil.......	Orangedale......	Storm King......
John Beaton...........	Blackstone......	Banner..........
J. J. McLellan.........	Glenville.......	Island Black.....
Hugh W. McDonald....	Margaree Harbor	Banner..........
Angus C. Cameron......	Glenora Falls....	Banner..........
Neil McKinnon........	Glenora Falls....	Banner..........
Ronald Gillis..........	Glenville........	Island Black.....
Alf. A. Taylor..........	Margaree Harbor	Banner..........
John B. McLellan......	Glenville........	Island Black.....
Alex. Cameron.........	Beatonville......	Banner..........

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
5.	9.	4.	23.	10.	19.	18.	4.	92.
4.	9.	4.	23.5	9.5	20.	18.	4.	92.
5.	9.	4.	23.	9.	20.	18.	3.5	91.5
4.	9.	4.	23.	9.	20.	18.	4.	91.
4.	9.	4.	23.	9.	20.	17.	4.	90.
4.	9.	4.5	22.5	10.	19.	17.	4.	90.
5.	9.	4.5	23.	9.	17.	18.	4.	89.5
4.	9.	4.	23.	9.	19.	16.	5.	89.
4.	9.	4.	22.	9.	20.	17.	4.	89.
4.	9.	4.5	23.5	9.	17.	17.	5.	89.
4.	9.	5.	22.	10.	18.	16.	5.	89.
4.	9.	3.5	23.	10.	18.	17.	4.	88.5
4.	9.	4.	22.	9.	19.	17.	4.	88.
4.5	8.5	4.	21.	9.5	19.	16.	5.	87.5
4.5	9.	4.	21.	9.	18.	18.	4.	87.5
4.5	9.	4.	23.	9.5	17.	16.	4.5	87.5
4.	9.	4.	22.	10.	17.	17.	4.	87.
4.	9.	4.	21.	9.	18.	18.	4.	87.
4.	9.	3.	22.	9.	19.	17.	4.	87.
4.	9.	4.	22.	9.	19.	15.	4.	86.

Name of Competitor	Address	Variety
Allen D. McLellan	Glenville	Island Black
John L. Tompkins	N. E. Margaree	Banner
Angus R. McDonald	B. Cove Chapel	Island Black
Angus Cameron	Mabou	Banner
LUNENBURG COUNTY.		
Wallace Rhodenizer	Bridgewater	Banner
Mark Rhodenizer	W. Northfield	Tartar King
A. W. Hebb	Bridgewater	White Banner
Owen G. Dauphinee	Bridgewater	White Banner
Joseph MacKay	U. Northfield	White Banner
Joseph Kaulback	Pine Grove	Tartar King
D. Asaph Newcomb	Newcombville	Tartar King
Asaph MacKay	U. Northfield	Brown Mane
Henry Tilton Hebb	Hebbville	White Banner
PICTOU COUNTY.		
G. W. Grant	Lyon's Brook	Banner
James Maxwell	Durham	Banner
Ross Bros,	Bayview	Banner
Calvin Langille	Marshville	Banner
Dan Blackie	Sylvester	Banner

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.	8.	4.	23.	9.	18.	16.	4.	86.
4.5	9.	4.	20.	9.	18.	17.	4.	85.5
5.	8.	3.	21.	10.	19.	15.	4.	85.
4.	8.	4.	23.	8.	19.	15.	3.	84.
5.	9.5	5.	23.5	9.8	18.4	19.2	4.9	95.3
4.9	9.5	5.	23.5	9.2	18.2	19.8	4.9	95.
4.9	9.8	5.	23.7	9.8	18.2	18.4	5.	94.8
4.9	8.5	4.8	22.5	9.2	18.	18.2	4.9	91.
4.9	9.	5.	22.	8.8	17.2	18.8	4.9	90.6
4.2	8.	4.5	21.5	9.	16.8	17.6	4.7	86.3
3.7	8.	3.5	21.5	8.	18.	18.	4.	84.7
4.5	8.	4.3	20.	8.5	16.8	17.6	4.	83.7
3.7	7.	4.4	18.7	9.5	16.4	16.8	4.	80.5
4.	9.	4.2	23.2	7.8	19.5	18.	4.5	90.2
4.	8.	3.8	23.5	8.2	18.2	17.	3.7	86.4
4.	8.	4.	23.	7.	18.5	17.5	4.	86.
4.1	7.	4.	23.	7.	18.	17.5	4.	84.6
3.8	7.8	3.	20.	7.8	18.	17.	3.8	81.2

Name of Competitor	Address	Variety
George Milne..........	Woodburn.......	Banner..........

RICHMOND COUNTY.

Name of Competitor	Address	Variety
Alex. G. McKay........	Grand River.....	Banner Club.....
William Chisholm......	Loch Lomond....	Ligowa..........
Dan McAuley..........	Grand River W..	Banner Club.....
William Kemp.........	L'Archeveque....	Unknown........
John Lauchlie McAuley	Grand River.....	Unknown.......
Angus McDonald.......	Soldiers' Cove....	White Banner....
Michael McDonald.....	Soldiers' Cove....	Island Black.....
Philip C. McAuley......	Grand River W..	Banner Club.....
Murdock A. McCuspic..	Grand River.....	White Banner....
Rod. A. McLeod.......	Lewis Cove Road.	White Banner....
Rev. R.L.McDonald,P.P	St. Peter's.......	White Banner....
D. N. Morrison........	Drummondville..	Unknown.........
Alex. M. Matheson.....	St. Esprit.......	Banner..........
Donald William Ross....	Points West Bay.	Ligowa..........
Dan. A. Matheson......	L'Archeveque....	Unknown........
Duncan Matheson......	Grand River W..	White Banner....
John D. Matheson......	St. Esprit.......	Banner Club.....
Jos. Gillis.............	Soldiers' Cove....	Island Black.....

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
3.8	7.5	3.6	21.	7.7	16.	16.2	3.	78.8
4.9	9.5	4.5	20.5	9.5	16.	19.	5.	88.9
4.9	9.5	4.2	21.	9.8	15.	19.	5.	88.4
4.5	7.5	4.5	22.5	9.5	16.	18.8	5.	88.3
4.5	7.5	4.5	20.5	9.5	19.	18.	4.5	88.
4.	8.	4.5	20.5	9.	17.	18.	4.9	85.9
4.	8.	3.7	20.	8.5	17.	17.6	4.9	83.7
4.	7.5	4.5	20.	9.	16.	17.	4.9	82.9
4.	8.	4.5	20.5	7.6	16.	17.6	4.9	82.5
3.5	7.	4.5	20.	8.	16.	17.	4.5	80.5
4.5	7.5	4.	16.	9.	17.	17.	4.9	79.9
3.5	6.	3.5	20.5	8.	17.	16.	4.9	79.4
3.7	8.	4.	18.7	7.	16.	17.	4.9	79.3
3.5	7.5	4.	17.5	8.	18.	16.	4.5	79.
4.	7.	4.5	17.5	7.5	16.	17.	4.9	78.4
4.	7.	3.5	18.7	9.	16.	15.	4.5	77.7
3.5	8.	4.	16.2	8.	16.	17.	4.	76.7
3.5	7.5	4.	18.7	6.5	14.	17.	4.9	76.1
4.	7.5	3.5	16.2	9.	15.	14.	4.9	74.1

Name of Competitor	Address	Variety
Martin Gillis...........	Soldiers' Cove....	Island Black.....
J. J. McDonald.........	Soldiers' Cove....	White Banner....
J. J. Johnston..........	Red Islands......	Black Tartarian..
Murdock A. McLeod....	Loch Lomond....	Banner..........
James C. D. Johnston...	Red Islands......	White Banner....
Angus A. Morrison.....	Loch Lomond....	Unknown........
George J. Matheson.....	L'Archeveque....	Unknown........
Kenneth McAuley......	Grand River.....	White Banner....
John F. Matheson......	Grand River.....	White Banner....
Ernest John Mariner....	Lake Uist.......	Tartarian Black..
Hector J. McRae.......	St. George's Cha'l.	Unknown........
Allan D. McCuish......	Loch Side.......	Banner..........
R. M. Morrison........	Head L. Lomond.	Banner..........
Rod. D. Patterson......	Grand River.....	Dodd's..........
Rod. D. McDonald.....	St. Esprit.......	Unknown........
R. J. Morrison.........	St. Esprit.......	Unknown........
Archie C. McBeth......	Grand River.....	Banner..........
John C. McLeod.......	Grand River.....	Unknown.......
Mrs. Wm. Matheson....	St. Esprit.......	Unknown........

General appearance considering:— (1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.	Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:— (1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	Total.
4.	7.	3.5	15.	9.5	14.	16.	4.5	73.5
3.5	6.5	3.5	20.	9.	13.	13.	4.5	73.
3.5	5.	3.5	20.	7.	14.	14.	4.5	71.5
3.5	6.	3.5	15.	8.5	14.	16.	4.5	71.
3.5	5.	3.5	17.2	7.	14.	16.	4.	70.2
3.2	6.5	3.2	16.2	7.	16.	14.	4.	70.1
3.	5.	3.5	17.5	9.	14.	14.	4.	70.
3.5	6.	3.	15.	7.5	14.	16.	4.5	69.5
3.5	6.	3.	16.	7.	13.	16.	4.5	69.
2.9	6.	3.5	15.	9.	15.	13.	4.	68.4
3.	6.	3.	17.5	6.	12.	16.	4.5	68.
2.5	5.5	3.	13.7	7.5	17.	14.	4.5	67.7
3.	6.	3.5	15.	6.5	12.	17.	4.5	67.5
3.5	6.	2.7	13.7	6.5	14.	16.	4.5	66.9
3.	5.5	3.5	13.7	7.5	14.	15.	4.5	66.7
3.	5.5	3.5	13.7	8.	13.	15.	4.5	66.2
3.	6.	3.2	13.5	6.5	13.	16.	4.	65.7
3.	6.	3.	15.	5.5	12.	14.	4.5	63.
2.5	5.	2.	17.5	8.	13.	10.	4.5	62.5

YARMOUTH COUNTY.

Name of Competitor	Address	Variety
Adolphus Corning......	Chegoggin.......	White Banner....
Judson Clements........	Brenton.........	Unknown........
Clifford Cann..........	Chegoggin.......	Banner..........
Murray Crosby........	Dayton.........	White Banner....
S. A. Cook............	Central Chebogue	American Banner.

General appearance considering:—			Freedom from weeds.	Freedom from smut, rust, blight and insects.	Freedom from other varieties and other kinds of grain.	Apparent yield and quality of grain considering:—		Total.
(1) Stand of crop.	(2) Type of plant, vigour and uniformity of growth.	(3) Acreage, method of seeding, absence of lodging.				(1) Proportion of well-filled heads of plump grain of good quality.	(2) Uniformity of maturity.	
4.9	9.5	4.	22.5	9.8	19.	19.	4.9	93.6
4.9	8.	4.5	22.5	9.2	18.	18.	4.9	90.
4.6	8.	4.6	22.	9.4	18.	17.6	4.7	88.9
4.9	8.	4.7	21.2	9.8	17.	16.8	4.9	87.3
3.7	7.5	4.5	21.2	9.8	17.	18.4	4.7	86.8

POTATO COMPETITION.

District No. 1—Digby, Yarmouth, Shelburne, and Queens Counties.

NO COMPETITION.

District No. 2—Annapolis, Kings, Lunenburg and Hants Counties.

Name of Competitor	Address	Variety
Albert Veinotte......	W. Northfield, Lun. Co............	Carmen........
Jas. Mader..........	W. Northfield, Lun. Co............	Mills Pride.....
Owen Dauphinee.....	Bridgewater, Lun. Co	Mills Pride.....
Jos. McKay.........	U. Northfield, Lun. Co............	Rural Blush....
Mark Rhodenizer.....	Bridgewater, Lun. Co............	Mills Pride.....
Wm. O'Brien........	Windsor Forks, Hants Co.....	Dakota Red.....
William Sharp.......	Windsor, Hants Co..	Dakota Red.....
L. W. Saunders.......	Dalhousie East, Kings Co.....	Gold Coin......
Wallace Rhodenizer..	Bridgewater, Lun.. Co............	Carmen........
A. W. Hebb..........	Bridgewater, Lun.... Co............	Carmen.........
Palmer Bros.........	Windsor Forks Hants Co.......	Dakota Red....
Leslie Taylor........	Windsor Forks, Hants Co.......	Dakota Red.....
A. F. Hebb..........	Hebbville, Lun. Co .	Mills Pride.....
Harris Shaw.........	Windsor Forks, Hants Co.......	Maiden Blush...

General Appearance considering:— (1) Method of planting, stand of crop.	(2) Vigor of growth, acreage, etc.	Freedom from blight, scabs and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield considering:— (1) Number and weight of marketable potatoes per hill.	(2) Quality, colour, shape and smoothness.	(3) State and uniformity of maturity, and freedom from sunburn.	Total.
7	8	20	20	10	15	10	10	100
7.	8.	19.5	19.	10.	14.5	9.5	9.5	97.
6.5	7.	18.	19.	10.	13.5	9.5	9.	92.5
6.75	7.5	18.	19.	9.	14.	9.	9.	92.25
6.75	7.	19.	19.	9.5	13.	9.	9.	92.25
6.5	7.5	18.	19.	9.5	13.5	9.	9.	92.
6.	7.	18.	18.5	9.5	13.5	8.5	9.	90.
6.5	7.	17.	19.	9.75	13.	8.5	9.	89.75
6.	7.5	17.	18.	9.5	13.	9.	8.5	88.5
6.	7.	17.5	18.5	9.5	13.	9.	8.	88.5
6.	7.	17.	18.	9.	13.	9.	9.	88.
6.5	6.75	17.	18.	9.	12.	8.5	9.	86.5
6.	7.	16.	17.	9.	12.5	9.	8.5	85.
6.	6.	15.	18.	9.	14.	9.	8.	85.
5.5	7.	17.	16.	9.	13.	9.	8.75	85.25

Name of Competitor	Address	Variety
Asaph McKay.......	U. Northfield, Lun... Co.............	Rural Blush....
William Sangster.....	Falmouth, Hants Co	Early Bangor...

District No. 3—Antigonish, Colchester, Cumberland and Pictou Counties.

Name of Competitor	Address	Variety
Geo. Milne..........	Woodburn, Pic. Co..	Green Mountain
R. D. Ross...........	Bayview, Pic. Co....	Green Mountain
James Thompson.....	Cloverville Antig. Co	Carmen........
John R. Harrison.....	Maccan, Cum. Co...	Carmen........
Arthur Wallace......	Pictou, Pic. Co......	Green Mountain
E. R. Stewart........	Old Barns, Col. Co...	Garnet Chili....
J. W. Maxwell.......	Durham, Pictou Co..	Carmen........
John J. Inglis........	N. Lochaber Ant. Co	McIntyre.......
Wm. Walsh..........	Fairmont, Ant. Co...	Carmen........
Herbert Atkinson.....	Maccan, Cum. Co....	Irish Cobbler...
James R. Hogan......	Denmark, Col. Co...	McIntyre.......
John W. McDonald...	Briley's Brook Antig Co.............	McIntyre.......
Albert H. McGregor..	Up. So. River, Antig Co...........	Carmen........
Dan. Blackie.........	Sylvester, Pic. Co....	McIntyre.......

General Appearance considering:—(1) Method of planting, stand of crop.	(2) Vigor of growth, acreage, etc.	Freedom from blight, scabs and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield considering:—(1) Number and weight of marketable potatoes per hill.	(2) Quality, colour, shape and smoothness.	(3) State and uniformity of maturity, and freedom from sunburn.	Total.
6.	6.5	17.	17.	9.	12.	8.	8.	83.5
6.	6.	18.	17.	9.5	10.	8.	8.5	83.
6.5	8.	19.5	19.	10.	13.	9.	9.	94.
6.5	8.	19.	18.5	10.	12.	8.	10.	92.
6.5	8.	18.5	17.	10.	12.	9.5	9.5	91.
6.5	8.	19.	18.5	10.	11.	8.5	9.	90.5
6.5	8.	18.	18.	9.5	12.	8.5	9.	89.5
7.	8.	19.	18.	9.5	9.5	9.	9.	89.
6.	8.	19.	18.	10.	10.5	8.	9.5	89.
7.	5.	19.5	19.	10.	10.	8.	10.	88.5
6.	7.	18.5	17.5	10.	11.5	8.5	9.	88.
6.	7.	19.	17.	9.	9.5	8.	10.	85.5
6.5	7.5	18.5	19.	7.	9.	8.	9.5	85.
6.5	6.5	18.	18.	9.5	10.	7.	9.	84.5
6.5	7.5	18.	18.	8.	8.	8.	9.5	83.5
6.5	7.	18.	17.5	10.	8.	7.5	9.	83.5

Name of Competitor	Address	Variety
Fowler Bros..........	Amherst Pt., Cum. Co...........	Carmen........
John H. McGregor....	Up. So. River Antig. Co..........	Carmen........
Alex C. Chisholm.....	N. Grant, Antig. Co..	Dakota Red....

District No. 4.—Cape Breton, Halifax, Inverness, Guysboro, Victoria and Richmond Counties.

Name of Competitor	Address	Variety
Hugh McPherson.....	Mabou, Inver. Co....	McIntyre.......
A. D. Deane.........	Dean, Halifax Co....	Dakota Red....
Aubrey Archibald....	C. Musquodoboit, Halifax Co......	Clark's No. 1...
A. D. Burris.........	U. Musquodoboit, Halifax Co..........	Dakota Red....
John Beaton.........	Blackstone, Inver. Co.............	McIntyre.......
D. R. Nicholson......	Coxheath, Cape Breton County..	Princess........
Allan McDonald.....	Inverness, Inverness County........	McIntyre.......
Adams Archibald.....	M. Musquodoboit Halifax Co......	Carmen No. I...
Allan D. McCuish....	Lock Side Rich. Co..	McIntyre.......
Angus C. Campbell...	Glenora Falls, Inverness County....	McIntyre.......

General Appearance considering:— (1) Method of planting, stand of crop.	(2) Vigor of growth, acreage, etc	Freedom from blight, scabs and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield considering:— (1) Number and weight of marketable potatoes per hill.	(2) Quality, colour, shape and smoothness.	(3) State and uniformity of maturity, and freedom from sunburn.	Total.
6.5	7.5	17.	17.	10.	8.	9.	8.	83.
6.5	7.	18.	16.	9.5	9.	8.	9.	83.
7.	0.	20.	18.5	10.	9.5	7.	10.	82.
5.	7.	20.	19.	10.	14.	8.	10.	93.
5.5	6.	16.	20.	10.	14.	10.	10.	91.5
6.	7.75	18.	20.	9.	12.	8.	10.	90.75
6.5	7.	18.	18.	10.	12.	10.	9.	90.5
6.	7.	18.	19.	8.	12.	10.	10.	90.
6.5	7.	14.	19.	9.	14.	10.	10.	89.5
5.	6.	18.	19.	10.	11.	10.	10.	89.
6.5	8.	14.	20.	10.	11.	10.	9.	88.5
5.	6.	16.	18.	10.	12.	10.	10.	87.
5.5	7.	15.	16.	10.	13.	10.	10.	86.5

Name of Competitor	Address	Variety
Patrick Tompkins....	East Margaree, Inverness County....	Black..........
A. T. Beaton.........	Brook Village, Inverness County.......	McIntyre.......
Ronald Gillis........	Glenville, Inver. Co..	McIntyre.......
John J. Johnson......	Red Isles, Rich. Co..	McIntyre.......
A. J. Campbell.......	Beatonville, Inver. Co.............	McIntyre.......
Wm. McLean........	No. Ainslie, Inver. Co.............	Dakota Red....
D. F. Beaton.........	Beatonville, Inver. Co.............	McIntyre.......
Dougald Campbell...	Margaree Forks, Inverness Co....	Rocky Mountain
Neil McLean........	Broad Cove Banks, Inverness Co....	Unknown.......
Alex. Cameron.......	Beatonville, Inver. County........	McIntyre.......
Allan Morrison.......	Big Pond, Cape Breton County..	Calico..........
J. J. McLellan.......	Glenville, Inverness County........	McIntyre.......

General appearance considering:—(1) Method planting, stand of crop.	(2(Vigor of growth, acreage, etc.	Freedom from blight, scabs and insects.	Method and thoroughness of cultivation.	Purity of Variety	Apparent yield considering:—(1) Number and weight of marketable potatoes per hill.	(2) Quality, colour, shape and smopthness.	(3) State and uniformity of maturity, and free fpom sunburn.	Total.
6.	7.5	12.	19.	10.	14.	9.	9.	86.5
6.5	7.	19.	12.	7.	14.	10.	10.	85.5
5.	7.	18.	19.	5.	13.	9.	9.	85.
3.	7.	18.	16.	10.	10.	10.	10.	84.
6.5	7.	19.	6.	10.	12.	9.	10.	79.5
4.	6.	18.	12.	6.	11.	10.	10.	77.
4.	6.	18.	10.	9.	10.	10.	10.	77.
6.	6.	17.	18.	10.	12.	9.	9.	77.
6.5	4.	16.	10.	8.	13.	10.	9.	76.5
6.	6.	16.	10.	10.	8.	9.	10.	75.
4.	6.	19.	10.	5.	11.	10.	10.	75.
5.	4.	10.	17.	10.	7.	9.	10.	72.

TURNIP COMPETITION.

Colchester County.

Exhibitor's Name and Address	Total Score	Yield per Acre		Prize
Frank A. Jennings, Masstown	90.8	1266	1st	$75.00
Frank Crowe, Old Barns	88.8	1317	2nd	50.00
Arnold Johnson, Lower Truro	87.7	1210	3rd	30.00
Wallace Bowers, G. Village	87.5	1125	4th	20.00
Albert Burrows, Truro	87.1	1106		
John R. Semple, Brule	85.5	1026		
W. Robertson, Up. Brookside	83.4	970		
Chas. E. Layton, Great Village	83.35	1058		
Lloyd Johnson, Cross Roads	82.6	882		
Willard Fulton, Bass River	80.3	818		
J. T Creelman, Halfway Brook	78.	800		
Elmer Henderson, McClure	77.	700		
E. Russell Stewart, Old Barns	75.5	900		
C. C. G. Walker, Masstown		*600		

*—Estimated Yield.

Cumberland County.

Exhibitor's Name and Address	Total Score	Yield per Acre		Prize
Manford Oulton, Lorneville	90.	1296	1st	$75.00
A. B. Forshner, Head of Wallace Bay	86.5	1082	2nd	50.00
Donald Tuttle, Head of Wallace Bay	82.25	976	3rd	30.00
G. I. Herritt, Windham Hill	81.	904	4th	20.00
Courtney Lusby, Amherst	78.	850		

Pictou County.

Exhibitor's Name and Address	Total Score	Yield per Acre		Prize
D. C. McKay, Scotsburn Sta.	86.4	1245	1st	$75.00
J. James Ross, Bayview	85.7	1037	2nd	50.00
Geo. M. Tattrie, Marshville	84.1	1030	3rd	30.00
J. J. Stevenson, Lyon's Brook	83.8	944	4th	20.00
W. Craigie, Merigomish	76.8	840		
Edward M. Dillon, Ardness		*800		
A. F. McDonald, Westville		*800		
F. W. Thompson Ponds		*700		
Ignatius Allen McDonald, Bailey's Brook		*650		
A. E. Cox, Brownsville		Failure		

*Estimated yield.

Mr. F. L. Fuller,
Superintendent Agricultural Association,
Truro, N. S.

Sir —We have the honor to submit herewith the second Annual Report of Demonstration work in Root Culture, carried on in the Island of Cape Breton.

Eighteen root plots were worked during the season, having a total area of about thirteen and one-half acres, and giving a total yield of 9990 bushels, the average yield, per acre, being 742 bushels. A detailed report of these plots will be found on another page.

These plots were all handled in much the same manner as the plots of last year, with this exception, that the owner of the land was required to pay for one-half of the commercial fertilizer used on his plot. Methods of working, seeding, etc., were identical with those of last year.

Compared with last year, the yields per acre were hardly as large, but, on the whole, were very satisfactory.

The plots were, generally, well cared for during the season, but the preparation giving the soil the previous fall was, on the majority of the plots, not as thorough as it should have been.

The falling off in yields was principally due to weather conditions. The long continued rains during the latter part of May and early June so saturated the soil that during the latter part of May and early June so saturated the soil that during the period of seeding we found very few plots in a proper condition for working. Although we realized that it was not good practice to work land in this condition yet, having a large amount of work to do and the time being limited, we were forced to do so in order to get all plots seeded.

Another factor which affected the yields was "Club Root". The fact that this disease is found, more or less, all over the Island, is a matter which causes some alarm. Several of the plots were slightly affected, and two of them very seriously.

The plants made splendid growth during July and August, but were again checked by a period of hot dry weather during September..

As was done last year, some simple fertilizer experiments were carried on on nearly all plots. While the figures are available, yet owing to the many factors which tend to influence results of such experiments, they necessarily vary considerably on the various plots. At best, they can only be taken as a general guide, and not accepted as a positive proof that the same results would be received each time from the use of any one of these fertilizers. However, this general observation may be made; that Acid Phosphate alone, on the root crop, gave nearly equal results with a 1-5-1 mixture of Nitrate Soda, Acid Phosphate, and Muriate Potash, Neither Nitrate Soda nor Muriate Potash gave much better returns than did stable manure alone.

Plots which were under roots last year were sown this year to grain and seeded down with clover and timothy. The grain was a good crop on all plots, and the stand of clover is encouraging.

In addition to the regular plot work, we had applications from some twenty farmers for assistance in work of this kind on their own farms. So far as it was possible, without neglecting the regular plot work, we gave them what assistance we could, supplying them with good seed and giving practical demonstration of proper methods of seeding, thinning, etc., as well as giving information on soil cultivation. Reports received from these men have been encouraging, and we feel that our time was well spent.

Two experiments were tried with corn, one on the farm of Mr. H. G. Matheson, Hunters' Mountain, the other on the farm of Mr. F. C. Cotton, St. George's Channel. The season, more particularly the early part of the season, was unfavorable to the growth of this crop, and that of Mr. Matheson was a failure. Mr. Cotton had a yield of about 10 tons of fodder per acre. There are a few sections, bordering on the Bras d'Or Lakes, where this crop might be grown successfully. As far as frost is concerned, these sections may seldom suffer during the growing season, but the amount of sunshine is hardly sufficient to properly mature the crop.

Experiments with ground lime stone were carried on on the farms of the following gentlemen:

J. A. McDonald, Judique.
F. C. Cotton, St. George's Channel.
Neil McKinnon, Kempt Head.
Michael McDonald, Soldiers' Cove.
C. A. Munn, Leitches Creek.
Rev. D. McPherson, P. P., Glendale.
H. G. Matheson, Hunters' Mountain.

This limestone was sown on land under grain, seeded to clover and timothy, and was applied at the rate of two tons per acre.

After careful inspections, we could see little, or no benefrom its use, but we feel confident that next year will show some results. The application was too light to give the best results, and, in nearly every case, the limestone was not sown until late in the spring. This material requires to be in the soil for some time before it can be broken down and accomplish its work.

Three meetings were addressed during the summer, namely, at Baddeck, Kempt Head, and Glendale, the first two being held in conjunction with Mr. W. A. MacKay, in the interests of the Baddeck Creamery.

There is an ever increasing demand for meetings dealing with the various phases of farm work and general agriculture. Having all that we could do, in the line of Demonstration work, we found ourselves unable to cope with the situation, and can only hope that during the coming season some arrangement can be made for carrying along this kind of work.

After seeding and thinning were finished, our time was spent in inspection work on the various plots, judging of field crops competitions, and in getting in touch with the farmers throughout the Island.

We are glad to report that the work is having its effect. Throughout those districts where work was carried on last year a great many farmers are growing small areas of roots and some had from one-half to one acre under this valuable crop. They are also paying considerable attention to better cultivation of the soil, selection of seed, improvement of general crops, as well as the better feeding and care of live stock. We are constantly called upon to solve problems of this kind.

Preparations have been made for carrying on Demonstration Root Plots during the coming season, on the same farms as last year.

In conclusion, we would desire to thank yourself, as well as others connected with the Department, for much valuable advice. Also, we wish to thank the farmers of Cape Breton for the many kindnesses extended to us and for the hearty support we received in our work. We hope that they will continue to take advantage of any help we may be able to afford them in solving their many problems.

Respectfully submitted,

H. S. CUNNINGHAM,
H. B. LANGILLE.

Name and Address	Size of Lot	Kind of Soil	Previous Crop	Amount Fertilizers				Date of Seeding	Date of Thinning	Yield per Acre.	REMARKS
				Barn Manure	Nitrate Soda 100	Acid Phos. 500	Muriate Potash 100				
Rev. A. R. McDonald, P. P., Christmas Isle.........	.29 ac	Sandy Loam	Hay	15 c. l'ds.	100	500	100	May 30	July 2	711	
*Rev. A. McKenzie, P. P., Pt. Hawkesbury.......	.27 "	" "	Oats & Hay	10 " "	50	250	50	June 3	July 8	962	See note below.
Rod Campbell, Hillside.....	1.00 "	" "	Hay	25 " "	200	1000	200	June 5	July 9	1173	
H A. Archibald, Pt. Hastings	.57 "	" "	Hay	8 " "	100	500	100	June 2	July 13	915	Badly infested with Club root.
D. D. McLellan, Glenville...	.99 "	Gravely and clay loam	Hay	25 w "	200	1000	200	June 10	July 10	1170	
Duncan McLellan, Upper Middle River...........	.53 '	Sandy Loam	Hay	8 " "	100	500	100	June 11	July 14	812	
David Tompkins, N. E., Margaree.................	1.00 "	" "	Hay	25 c "	200	1000	200	June 15	July 14	784	
Neil McKinnon, Kempt Head	68. "	Clay Loam	Hay	20 " "	200	1000	200	June 16	July 2	588	½ of field very wet when seeded Wet all season.
A. S. McDonnell, Port Hood.	.99 "	Sandy Loam	Hay	15 " "	200	1000	200	June 19	July 14	756	Portion of field very wet.
Alex. Munroe, Marion Bridge	1.20 "	Clay Loam	Hay	20 w "	200	1000	200	June 23	July 21	425	Portion of field very wet when seeded
J. A. McDonald Judique....	.93 "	" "	Hay	15 " "	200	1000	200	June 23	July 18	518	
Chas. Munn, Leitches Creek.	.54 "	Sandy Loam	Hay	10 " "	150	800	100	June 24	July 22	733	3-4 of field badly infested with club root
Rev. R. L. McDonald, P. P., St. Peter's............	.47 "	Clay Loam	Oats	32 c "	100	500	100	June 26	July 23	673	
Reynolds Smith, Arichat....	.72 "	Sandy Loam	Hay	20 " "	200	1000	200	June 27	July 25	638	Infested with club root.

Michael McDonald, Soldiers Cove	.66 "	" "	Hay	20 " "	200	1000	200	June 29	July 24	723	
Angus McInnis, S. S. Big Baddeck	.60 "	Loam	Oats		100	500	100	June 29	July 30	500	Rain stopped operations on first day of seeding. Remainder seeded about 10 days later.
Rev. D. A. McPherson, P. P. Glendale	1.00 "	Peat & Clay Loam	Hay	30 " "	200	1000	200	July 3	July 27	600	
F. C. Cotton, St. George's Channel	1.02 "	Clay Loam	Hay	50 " "	200	1000	200	July 4	July 28	729	Land wet most of season.

*Plot originally ½ acre. Unknown to us one half of the plot had received a very heavy dressing of salt fish the previous spring. The turnip plants started, but as soon as the roots got down into the soil, the plants sickened and died. Plot was re-seeded with no better results When we discovered where the trouble lay we plowed this half of the plot (early in August) plowing deeply and letting stand for a few days, during which time there was a heavy rain. As soon as land dried out sufficiently it was well harrowed, receiving a dressing of Basic Slag, drilled and seeded to "White Globe" turnips. Although late in the season a fair crop of these roots was obtained after this treatment.

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir —I have the honor to submit my sixth annual report in connection with Exhibitions.

The change of the Agricultural Acts, increasing the grant to Exhibitions, two successful years, and the culling out of the Provincial Exhibition, combined to make the most successful year in the history of the Province, so far as County and District Exhibitions are concerned.

Thirteen Fairs were held during the year. Weather conditions generally were favorable, the number of exhibits satisfactory, in most instances a larger amount of prize money paid than any previous year, and, in the majority of cases, the Management were able to show the balance on the right side.

Local Fairs have increased wonderfully, in numbers, size and efficiency, during recent years. Inverness, for the first time in its history, held a very successful Show at Port Hood.

In September, 1913, the Municipality of Clare in Digby County started, in a very small way, to hold a Fair. Last year they held an Exhibition, which compared favorably with many in the Province.

The "so called" Three Counties' Fruit Show came under the regular Exhibition Act this year. The Live Stock, and Field Crops end of the prize list were largely increased, and the Fair held at Kentville. From the point of quantity and quality of exhibits, the Show was a decided success. Unfortunately, it was not such a success financially.

The supplying of expert judges by the Department of Agriculture is now unanimously recognized as the most potent factor in Exhibition improvement. Those engaged this year were: Prof. Trueman, S. A. Logan, J. R. Starr, William Murray, Spurgeon Gammon, Prescott Blanchard, S. J. Moore, J. P. Landry, Prof. Shaw, George H. Vroom, W. A. MacKay, Harvey Mitchell, W. H. Henry, T. C. Latham Owen G. Dauphinee, James Allen, H. S. Cunningham and Harry R. Brown.

The following table gives a list of Exhibitions held during the year, with statements covering the main features.

Respectfully submitted,

F. L. FULLER,
Superintendent of Exhibitions.

EXHIBITIONS 1914.

County	Town	Secretary	Gate Receipts	Number of Exhibits	Prize Money	Total Receipts	Total Expenditure
Antigonish.......	Antigonish....	Allan McDonald...	$338.92	1314	$ 692.55	$1185.00	$1128.50
Cape Breton.....	Sydney.......	S. P. Challoner.....	3802.00	3174	3975.80	9657.63	9629.15
Colchester & East Hants.......	Shubenacadie.	W. D. Bowers......	743.05	2375	1304.30	2119.10	2211.54
Digby...........	Bear River...	C. F. McDormand..	202.35	1260	386.05	886.27	820.76
Guysboro........	Guysboro.....	H. M. Scott.......	282.18	725	575.70	1083.67	1042.82
Inverness........	Port Hood....	J. S. McLean......	454.00	330	359.90	1415.87	1117.24
Kings, Hants & Annapolis..	Kentville.....	W. M. Carruthers..	989.90	3184	1825.90	2688.90	3098.69
Little Brook.....	Little Brook..	Arnaud S. Comeau	240.75	131	225.30	553.25	501.05
Lunenburg.......	Bridgewater...	J. W. Margeson....	1534.30		1051.85	3484.92	3100.90
Queens..........	Caledonia....	Josiah Smith.......	453.00	1035	511.80	1017.38	1025.38
Shelburne........	Shelburne....	Wm. K. Hood......	289.40	1200	472.87	1035.53	957.04
Yarmouth........	Yarmouth....	Wm. Corning......	1771.00	2459	2157.55	5134.57	4043.97
Halifax..........	M. Musquodoboit......	Chas. Logan.......	452.30	1073	766.15	1605.94	1204.62

Prof. M. Cumming,
Secretary for Agriculture,
Truro, Nova Scotia.

Sir —I have the honor to submit my fifth annual report of the County Farmers' Associations.

There are now thirteen County Associations in the Province, although there are only eleven contained in the tabulated report. The West Hants Association failed to hold their Annual Meeting in time to be included in the report, and the Richmond County Association has re-organized, but their report is not completed.

The total membership for the year is 1521, being 398 less than last year; the number of meetings 160, which is 47 less than last year, the total attendance 5923, which was 674 less than last year. The average attendance was 37, as compared with 33 last year.

The number of meetings held and not reported by County Associations 60, total attendance 2678, and average attendance of 44.

It will be noted that during the last two years there has been quite a large decrease in membership and in the number of meetings held. One of the reasons for this is, that when these County Associations were organized their chief work consisted of conducting meetings, and, so long as the demand for meetings remained, the Associations had a definite work to do. It must not be assumed, however, that, because there is not the same demand for meetings as formerly, conducting meetings was a failure. It is rather because the Province has been pretty thoroughly covered and the results have been satisfactory. Another reason for the lesser demand for meetings is that the Department of Agriculture are establishing Short Courses at several centres in the Province, and the demonstration work done there is more practical and popular than merely a lecture on some Agricultural topic. Therefore, appreciating that, to some extent, the work for which the Associations were organized has been accomplished, it has been deemed advisable to include other fields for labor.

It is now proposed to have County Associations incorporated and an Act passed providing for the affiliation of Agricultural Societies with the County Associations. Thus each County can have one Association representing the whole County, which would be in a position to buy and sell cooperatively on a scale which would be decidedly advantageous.

Furthermore it must not be forgotten that several County Associations are conducting successful Exhibitions, others have organized Seed Fairs and are establishing local Clubs, all of which are promoting the agricultural and social welfare of the communities in which they are held

The following is a tabulated report of the Associations in each County, giving (1) names of chief officers, (2) total membership, (3) number of meetings, (4) total attendance, (5) average attendance, (6) total receipts, (7) total expenditure, (8) balance on hand.

All of which is respectfully submitted.

F. L. FULLER.

COUNTY ASSOCIATIONS.

COUNTY	Nnmber of Members	Number of Meetings	Total Attendance	Average	Total Receipts	Total Expend-iture	Balanc
Annapolis							
President, R. J. Messenger, Lawrencetown; Vice-President, S. A. Patterson, Wilmot; Secy.-Treas., L. W. Elliott, Clarence.......	107	20	460	23	$ 109 39	$ 77 40	$ 31 99
Antigonish.							
President, A. S. McMillan, Antigonish; Vice-President, Rev. M. Tompkins, Antigonish; Secy.-Treas., Allan McDonald, Antigonish..	50	5	400	80			
Cape Breton							
President, A. R. Richardson, South Bar; Vice-President, A. K. Jackson, Jacksonville, Secy-Treas., R. M. Jackson, Jacksonville.	202	12	475	39	414 11	184	230 11

Cumberland							
President, Samuel Freeman, Amherst; Vice-President, C. E. Davison, Halfway River; Secy.-Treas., C. H. Black, Amherst.	51	16	351	22	85 90	86 50	60
Digby							
President, W. A. Bacon, Acaciaville; Vice-President, W. W. DeLong, Hill Grove; Secy-Treas., F. W. Nichols, Digby.	215	14	308	22	155 84	143 29	12 55
Inverness							
President, D. F. McLean, Port Hood,; Vice-President, Jas. Gillis, S. W. Mabou; Secy.-Treas., A. J. Campbell, Beatonville.	76	4	166	41	1502 03	1163 04	333 99
Kings.							
President, Manning Chute, Berwick; Vice-President, M. K. Ells, Port Williams; Secy.-Treas., W. H. Woodworth, Berwick.	176	33	1042	32	252 82	213 32	39 50
Lunenburg							
President, Wallace Rhodenizer, Bridgewater; Vice-President, Lemuel G Hebb, Lunenburg Secy.-Treas., J. L. DeLong, Barss' Corner. . .	169	19	1064	56	170 33	141 45	28 88

COUNTY ASSOCIATIONS—*Continued.*

COUNTY	Number of Members	Number of Meetings	Total Attendance	Average	Total Receipts	Total Expenditure	Balance
Pictou							
President, William Murray, Union Centre; Vice-President, A. G. McKay, Stillwater; Secy.-Treas., Chas. A. Maxwell, Saltsprings.	192	16	639	40	161 89	142 76	19 13
Queens							
President, L. H. Dailey, North Brookfield; Vice-President, H. J. Freeman, Kempt; Secy.-Treas., M. U. Freeman, Kempt.....	75	10	198	19	154 05	49 49	104 56
Yarmouth							
President, S. W. Porter, Yarmouth; Vice-President, S. A. Cook, Central Chebogue; Secy.-Treas., S. P. Goudey, Yarmouth.....	209	11	820	75	115 51	106 99	8 52

PART III.

SERIES OF ARTICLES ON POULTRY.

INTRODUCTION.

The writer has endeavored to get together a series of articles on the Poultry Industry which will be of some assistance to persons interested. It is not the intention in collecting the information contained to present a text book for poultrymen. A great deal has already been written on this subject and one who has little or no knowledge of poultry will be confused by the number and variety of ideas which are advanced as the best methods for caring for the fowls.

In presenting these articles it is to be expected that they will not cover the subject as completely as a text book but they are all written by persons who have had some practical experience which is not often recorded in the text books.

The writer wishes to acknowledge his obligation to the authors of the different articles and also to thank the management of the different Poultry Departments at the Colleges and Experimental Stations throughout Canada, and the United States for permission to make use of very valuable material from their publications. I have also made very extended quotations from the publications of the Dominion Department of Agriculture which I wish to acknowledge, without the aid of these extracts it would be a very difficult matter to place the subject before the public in as clear and concise a manner as has been done by the authors of the publications from which the quotations have been taken.

I have also made extracts from many of the very highly instructive articles which have appeared in the general agricultural and poultry press during a number of years past.

In conclusion my sincere thanks are due to many who have given me some very helpful advice and to Principal Cumming for the splendid opportunity of bringing to the attention of the people of the Province of Nova Scotia this collection of instructive articles, which it is expected will very materially assist in promoting the interest in the keeping of more and better poultry.

J. P. LANDRY,

Manager and Lecturer Poultry Dept.,

Agricultural College, Truro, N. S.

A STATISTICAL STUDY OF EGG AND POULTRY CONDITIONS IN CANADA.

By W. A. Brown, M. S., A. S. A., Dept. of Agriculture, Ottawa.

Unfortunately, ways and means have not yet materialized whereby more frequent and accurate estimates may be arrived at in connection with the relative value of the Poultry Industry as compared with other Agricultural Industries. Most of the information available is obtained from the various census' and while the census enumerators do not take cognizance of the number of poultry in towns and villages, it is possible at least by contrasting the returns of one census with another to secure a fairly accurate estimate of the relative growth of the Industry.

At the time of writing, the completely tabulated statement for the whole of the Dominion for the census of 1911, has not been issued. The figures quoted are taken therefore, from the Bulletins published for each Province.

Table No. 1 gives the numbers of hens and chickens in Canada, by Provinces for the census of 1901 and 1911, together with the increase in numbers, apparent in each Province.

TABLE NO. 1.

Census Returns for Poultry, by Provinces.

(Hens and Chickens).

Provinces	Census 1911	Census 1901	Increase
Nova Scotia	910,408	738,125	172,283
New Brunswick	914,868	648,893	265,975
Prince Edward Island	697,292	515,399	181,893
Quebec	4,823,472	3,066,304	1,757,168
Ontario	13,217,146	9,632,961	3,584,185
Manitoba	2,441,655	1,098,920	1,342,735
Alberta	2,340,221	238,040	2,102,181
British Columbia	967,841	346,480	615,361
Saskatchewan	3,242,820	277,085	2,965,735
Totals	29,555,723	16,562,207	12,987,516

Distinct increases are apparent in every Province, particularly, Ontario and Quebec and the Western Provinces. The total increase of twelve million, shows a percentage increase of slightly over 75%.

Table No. 2. shows the relative number of Ducks and Geese, by Provinces, according to the two last Census.

TABLE NO. 2.

Census Returns for Poultry by Provinces.

Provinces	Ducks		Geese	
	Census 1911	Census 1901	Census 1911	Census 1901
Prince Edward Id . . .	11,040	13,436	42,752	36,826
New Brunswick	14,196	11,963	23,303	21,192
Nova Scotia	10,848	12,801	18,782	22,189
Quebec	60,098	28,080	102,949	62,679
Ontario	289,681	178,215	364,295	234,415
Manitoba	35,411	24,381	28,472	10,297
Saskatchewan	54,968	8,181	22,999	3,023
Alberta	26,092	4,147	19,653	1,590
British Columbia	27,898	9,371	6,808	3,786
Totals	530,232	290,545	630,013	395,997

The total number of ducks and geese throughout the Dominion almost doubled in ten years. It is to be noted, however, that the greatest increases took place in the Western Provinces and in Ontario and Quebec. Of the Maritime Provinces, New Brunswick was the only one that showed an increase in the number of ducks. Nova Scotia, on the other hand, was the only Province that showed a falling off in both the number of ducks and geese.

Table No. 3 shows the relative number of turkeys, by Provinces, according to the Census of 1911 and 1901.

TABLE NO. 3.

Census Return for Poultry by Provinces.

Provinces	Turkeys	
	Census of 1911	Census of 1901
Prince Edward Island	9,852	15,509
New Brunswick	30,276	30,532
Nova Scotia	11,945	23,564
Quebec	166,209	80,769
Ontario	416,706	389,431
Manitoba	79,639	28,450
Saskatchewan	72,616	7,155
Alberta	67,151	6,369
British Columbia	8,926	2,790
Total	863,320	584,569

Throughout the Dominion, quite a large increase in the number of turkeys is apparent. However, it is to be noted that as in the case of ducks and geese, this increase, was largely confined to the Western Provinces and to Ontario and Quebec. All three Maritime Provinces showed a falling off, the number of turkeys apparent in Nova Scotia according to the last Census being only about one-half as many as those recorded in the previous Census.

VALUE OF POULTRY AND POULTRY PRODUCTS.

Table No. 4 shows value of all Poultry, fowls, ducks, geese, and turkeys in Canada, by Provinces.

TABLE NO. 4.

Value of all Poultry, Fowls, Ducks, Geese, and Turkeys in Canada.

Provinces	Census of 1911	Census of 1901
British Columbia	$ 683,325	$ 209,747
Alberta	1,358,012	109,794
Saskatchewan	1,987,975	116,582
Manitoba	1,116,096	417,586
Ontario	6,214,868	3,125,166
Quebec	2,743,370	1,166,314
Nova Scotia	325,232	218,223
New Brunswick	348,133	213,319
Prince Edward Island	269,998	147,159
Totals	15,047,009	$5,723,890

All provinces show a distinct increase, the largest increases, of course, being apparent in the Western Provinces although the value of the Poultry in the Provinces of Ontario and Quebec, more than doubled in the decade.

Table No. 5 shows value and quantity of eggs produced and sold, for years 1910 and 1900.

TABLE NO. 5.

Value and Quantity of Eggs Produced and Sold.

Provinces	Census of 1911		Census of 1901	
	Value,	Quantity (Dozen)	Value,	Quantity (Dozen)
Nova Scotia	$ 929,413	5,183,295	$ 543,108	4,419,239
New Brunswick	665,265	3,878,149	372,745	3,120,012
P. E. I.	522,928	3,533,079	248,123	2,426,251
Quebec	4,092,695	20,076,629	2,007,320	15,502,415
Ontario	10,730,011	58,598,529	5,756,221	49,779,845
Saskatchewan	2,252,253	11,447,036	161,652	1,216,385
Manitoba	1,765,189	9,646,823	605,534	5,038,062
Alberta	1,515,543	7,031,907	165,196	980,852
British Columbia	1,027,876	3,624,685	426,629	1,651,741
Totals	$23,501,173	123,002,132	$ 10,286,828	84,134,802

Again distinct increases are apparant in every Province but while the increase in production has been large, the greatest increase is apparent in the increased value. Production increased about 66% while the values more than doubled.

Table No. 6 shows value of all poultry sold.

TABLE NO. 6.

Value of Poultry sold by Provinces.

Provinces	Sensus of 1911	
	Sold Alive	Slaughtered and Sold
Nova Scotia	73,272	$ 90,794
New Brunswick	86,549	169,117
P. E. I.	42,547	87,981
Quebec	1,047,976	660,491
Ontario	2,685,297	1,451,608
Manitoba	286,656	255,113
Saskatchewan	153,163	227,718
Alberta	252,611	170,673
British Columbia	211,329	56,091
Totals	$4,839,400	3,169,586

In the Census of 1901, no estimates of the value of poultry slaughtered or sold alive, are given. The number, however, is recorded and an approximate estimate of the value may be arrived at by any one interested. From the figures given, it is interesting to note that even at this early stage of the development of the live poultry trade, the value of those sold alive exceeded by over a million dollars, the value of those slaughtered and sold.

Table No. 7 shows the total value of all Poultry and Poultry Products in Canada, according to the last Census.

TABLE NO. 7.

Total Value of Poultry Industry to Canada.

	Census of 1911	Census of 1901
Eggs produced and sold	$23,501,173	$10,286,828
Poultry Sold Alive	4,839,400	*
Poultry Slaughtered and sold	3,169,586	*
Value of Poultry on Farms	15,047,009	5,727,890
Total	$46,557,009	$16,014,718

*Not recorded

The total value of the Poultry Industry to Canada, as indicated, amounts to a little more than forty six and a half million dollars. It is no exaggeration, however, to refer to the Poultry Industry as being a Fifty Million Dollar Industry, for it is reasonable to believe that if due cognizance had been taken of all poultry and poultry products produced in towns and villages and other places not included in the Census, the total would easily have reached this amount.

CANADA IMPORTS EGGS.

At one time, Canada exported large quantities of eggs. A few eggs are still exported, but in recent years the Imports have greatly exceeded the Exports. The following table gives the Exports and Imports of Eggs since 1900.

TABLE NO. 8.

Exports and Imports of Eggs since 1900.

	Exports	Imports.
1900..........	10,187,906 Dozen	709,829 Dozen
1901..........	11,363,064 "	951,745 "
1902..........	11,635,064 "	772,572 "
1903..........	7,404,100 "	559,236 "
1904..........	5,780,316 "	972,242 "
1905..........	3,601,427 "	306,567 "
1906..........	2,921,725 "	462,669 "
1907..........	2,591,205 "	661,104 "
1908..........	1,365,890 "	1,149,986 "
1909..........	552,850 "	1,136,120 "
1910..........	160,650 "	884,073 "
1911..........	92,164 "	2,378,640 "
1912..........	203,231 "	7,577,826 "
1913..........	126,854 "	13,240,111 "
1914..........	* 485,202 "	11,274,108 "

*Of this quantity 361,200 dozen were not produced in Canada, (most probably Chinese eggs).

It will be noted that the Imports during the last fiscal year are slightly less than during the previous year. This is due to the fact that Production is increasing in the Western Provinces. This point will be further borne out by Table No 9.

TABLE NO. 9.

Imports of Eggs into Canada for the Fiscal Years Ending March 31st, 1913 and March 31st, 1914.

	By Provinces	
	1913	1914
British Columbia	5,529,414 Dozen	4,998,911 Dozen
Manitoba........	2,664,326 "	1,412,305 "
Alberta..........	1,954,110 "	1,568,657 "
Ontario..........	1,724,629 "	1,730,468 "
Quebec..........	812,201 "	1,103,118 "
Saskatchewan...	414,340 "	314,799 "
Yukon...........	138,779 "	145,726 "
Nova Scotia.....	1,996 "	75 "
New Brunswick..	316 "	70 "
Total.......	13,240,111 "	11,274,108 "

That production is increasing rapidly in the western Provinces, is borne out by the fact that imports there are falling off while in the East with increasing urban centres, the imports are increasing.

CONSUMPTION OF EGGS IN CANADA.

Canadians are large consumers of Eggs and it will be of interest to Poultrymen to note that the per capita, consumption of eggs in Canada is steadily increasing.

TABLE NO. 10.

Relation of Consumption to Production in the Canadian Egg Trade.

	1891		1901		1911	
Population of Canada........	4,833,293		5,371,315		7,204,838	
Poultry Population of Canada..	12,696,701		16,562,084		123,002,132	
*Total Egg Production........	*64,499,241	Doz	84,134,802	Doz	29,548,723	Dozen
Exports of eggs..............	8,002,935	“	11,363,064	“	92,164	“
Imports of eggs..............	602,533	“	951,745	“	2,378,640	“
Total Consumption..........	57,078,839	“	73,723,483	“	125,288,608	“
Average per capita,..........	11.8	“	13.72	“	17.39	“

*Estimated.

The increase in per capita, consumption between the years 1891 and 1901 was approximately two dozen, between 1901 and 1911, it amounted to nearly four dozen. It may be of interest also, to note that from casual observation, it is apparent that this increase is not by any means confined to the cities. Farmers themselves are eating more eggs than ever before. In some districts, where it is almost impossible to secure fresh meat at certain seasons of the year, the people are relying largely upon eggs as a source of meat food.

The Quality of Canadian Eggs as Marketed.

During the past two years, the Poultry Division of the Live Stock Branch of the Dominion Department of Agriculture has been engaged in a systematic investigation of conditions prevailing in the Egg Trade. From information at hand, it may be estimated that, in the Summer time, not over 33 per cent of all eggs received in the large markets, grade "select", about 40 per cent, grade "stale," approximately, 17 per cent, "very stale", 5 per cent, dirty and broken and 5 per cent bad. Some dealers state that as high as 10 to 12 per cent of their receipts prove, upon examination, to be wholly unfit for food.

Conditions, however, are improving and it is confidently expected that as a result of the rapidly increasing interest, on the part of producers generally, and the efforts being put forth by the various Provincial Departments of Agriculture, the Agricultural Colleges, and the various Branches of the Federal Department of Agriculture, that in a few years the Poultry Industry will be one of the most important of the Agricultural Industries in the Dominion of Canada.

THE RURAL SCHOOL AND THE POULTRY INDUSTRY

By Prof. M. A. Jull, McDonald College, Quebec.

When coming to Quebec a little over two years ago I soon realized that much work would have to be done in improving poultry conditions before the poultry industry would be of much value. As far as the English speaking section of the province is concerned there has been but little attention given to poultry raising. The farmers are, on the average, quite backward in the proper methods of management, as well as in marketing their produce. I am not in close touch with the poultry industry of the French speaking section of the province but, from what I do know, I believe that it is in about the same condition as in the rest of the Province. The whole province has been somewhat backward in spite of the fact that considerable money has been expended in encouraging and developing the industry. Conditions are changing, however, and there seems to be a greater interest as well as more organization being undertaken both in the French speaking and the English speaking districts.

In regard to the development and improvement of any agricultural industry the old idea is usually prevalent, that is, the work undertaken in connection with any industry has been carried on with the adult population of the province. This has been done through farmers' organizations, co-operative societies, farmers' institutes, and in other ways in which the older people of the province only were interested. As far as agricultural matters are concerned practically no attention has been given to the younger people. For the past two years, however, we have been working with the school children in our attempts to improve the poultry industry. This is the new idea. It is quite distinct from the old idea and while it has many advantages there are also a few disadvantages, but in the long run I am sure that this line of work will have its greatest effect in the next ten or fifteen years.

The idea was to get in touch with those school children and others throughout different parts of the province who had even a little inclination for agriculture and were interested in poultry raising; that is, we try to get hold of a class of young people who were not only naturally interested in poultry culture but were also willing to co-operate with us in whatever work we undertook.

There are many different plans by which school children and others can be interested in problems of agriculture. After careful consideration we decided that the method which we adopted was not only one which would interest the school children but it was one also which would give definite results in a comparatively short time, that is, we looked at the whole question from two standpoints. We wanted to interest the younger generation in improved poultry culture and we also wanted to get practical results within a reasonable time. The plan which we adopted was to distribute hatching eggs free of cost to a large number of school children. This has been done for two years and last year 425 settings were sent out to rural schools in various parts of the province.

The method of distribution is rather simple and effective Fortunately, Macdonald College has several demonstrators located in different parts of the province. These demonstrators are in close touch with rural conditions and are also in personal contact with the people and the schools in their respective districts. They work through the school teacher, the superintendent and others who are interested in this particular line of work. Together with the school teachers, the various rural schools and academies, a list of pupils were secured who would willingly undertake to work with the Poultry Department of our College in this particular line of work. Briefly, each pupil selected by the demonstrator was sent a setting of eggs on condition that he would take the best care of the eggs and the chicks which he would hatch from them, and would also show all of the chicks which he hatched from these eggs, but none others, at a school fair provided for the same. This was a good proposition for the girl or boy who is interested in chickens. There were many applications, even as many as three or four from one family, but as it was our policy to distribute this work as widely as possible, many names had to be restricted. We wanted our first efforts in this line to be as effective as possible, consequently the demonstrators secured their names very carefully and pains were taken to make sure that each girl or boy who agreed to take the eggs was a suitable person and one also who would do the best possible.

Naturally close oversight in this line of work is more or less impossible. The demonstrator for instance, may have as many as 50 or 60 pupils throughout his district who has each received a setting of eggs, and it would be quite impossible for him to keep his eye on all of these pupils throughout the summer. However, as many observations as possible are made and each demonstrator keeps in fairly close touch with the pupils so that every assurance is given that things are doing all right.

Then we had the added advantage that I was able to meet a large number of the pupils in a more or less personal way. At different times throughout the year arrangements are made with school teachers to give a talk on poultry some time during the regular school hours. Where poultry clubs have been organized I have given talks before the members of these clubs and in that way I have been able to get in touch with quite a number of pupils. Such work is not only interesting but I believe it is very valuable and certainly it is encouraging to note the great interest which the younger people have in agricultural problems. The demonstrators also accomplish a great deal through visits to various farms and by giving advice and suggestions to the pupils.

I have mentioned previously that the girls and boys were given the eggs on condition that they would show all of the chicks, but none others, at a fall fair provided for the same. This fall there are ten rural school fairs at which pupils are exhibiting corn, potatoes and chickens. These fairs are being organized by the demonstrators in co-operawith the Heads of the Departments of the College. These were first started last year where chickens only were shown as eggs only had been distributed up to this year. Last year the rural school poultry fairs were very successful indeed. At Shawville for instance, the school children exhibited over 325 chickens and the competition was very keen. The idea of holding the school fair was an aid in this rural extension work. It serves as a means of comparing the summer work with various pupils and it also provides means of further rousing the interest of the competitors. The fair is most decidedly a good educational feature and it tends to impress upon the community the value of the poultry industry.

A suitable prize list is provided which, on the average, is about as follows:—

Class 6. Poultry.

Sect. 1. To the Pupil with the Largest and Best Lot of Chickens. 10 Prizes....$1.00, 90c, 80c, 70c 60c, 50c, 40c, 30c, Ribbons.

Sect. 2. To the Pupil with the Best Pen of 5 Birds (4 pullets, 1 cockeral) in the Show.
(Winners in Sect. 1 not allowed to compete).
10 Prizes....90c, 80c, 70c, 60c, 50c, 40c, 30c, 20c Ribbons.

Sect. 3. To the Pupil with the Best Trio of Birds (2 pullets, 1 cockeral) in the Show.
(Winners in Sect. 1 and 2 not allowed to compete).
10 Prizes....80c, 70c, 60c, 50c, 40c, 30c, 20c, 10c Ribbons.

Sect. 4. To the Pupil with the Best Pair of Birds (Pullet and cockeral) in the show.
15 Prizes....80c, 70c, 60c, 50c, 40c, 30c, 20c, 10c Ribbons.

Sect. 5 To the Pupil with the Best Cockeral in the Show.
10 Prizes....80c, 70c, 60c, 50c, 40c, 30c, 20c, 10c Ribbons.

Sect. 6. To the Pupil with the Best Pullet in the Show.
10 Prizes....80c, 70c, 60c, 50c, 40c, 30c, 20c, 10c Ribbons.

Sect. 7. To the Pupil with the Bird Best Prepared for Show.
15 Prizes....90c, 85c, 80c, 70c, 60c, 50c, 40c, 30c 20c, 10c, Ribbons.

Sect. 8. To the Pupil Writing the Best Original Composition on the Hatching and Rearing of Chickens.
10 Prizes....$1.00, 90c, 80c, 70c, 60c, 50c, 40c, 30c, Ribbons.

The results of this extension work among the school children are both practical and educational. It is accomplishing two purposes at the same time. It is practical because it establishes an improved strain of poultry in various districts of the country and tends to establish community breeding centres. Thus it will have a great commercial value to the poultry industry of the province. It is educattional in that it tends to arouse interest in poultry culture and it is a means of educating younger people in the proper methods of raising chickens.

One result of this work is that there is much more interest in poultry, both among the young and older people. The older people become directly interested through the great interest which their children manifest in their work. This is good.

Better methods in raising poultry are being adopted, not only by those who are engaged in this work, but also, others throughout the province are influenced directly as well as indirectly.

The most important feature, however, of the work is the distribution of pure bred stock, particularly cockerels. When several hundred male birds are distributed throughout the province each year it should do a great deal to improve the productive capacity of the fowls of the province. Considering the fact that not only has one breed been distributed but that the eggs have been from one strain of that particular breed, uniform results should be expected.

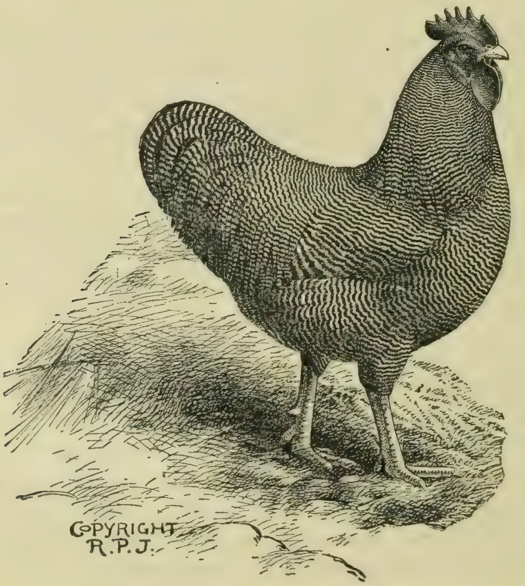
Thus community breeding centres are practically being established. Naturally it may take a number of years for this particular breed to predominate in any district. If this work is carried on for a number of years in one district, however, the flocks of that district should become fairly uniform and the district should win a reputation for that particular class of stock.

In conclusion, then, the purposes in carrying on this extension work among rural schools and children are two-fold. Firstly, to interest and educate the younger people in poultry raising, and secondly, to secure the most feasible results in a practical way for the improvement of the poultry industry. The strongest argument in the support of this work is the interest which the children display in, and the results which they secure from this extension work.

BREEDS, SELECTION AND MATING.

By Seth Jones, Superintendent Poultry for N. B.

It is now generally conceded by most all practical poultrymen that there are too many breeds of poultry. This would not be so bad if it were not for the subdividing of most all of these breeds in the different varieties of each breed. Type makes the breed, and color the variety. For instance, the Wyandotte Breed which originated in the Silver Laced Wyandotte now claims the large family composed of the White, Buff, Black, Columbia, Partridge, Silver Penciled, Golden, Blue and Jubilee. Wyandottes are all the same type and weight, but all of different colors. This has been done by the fancier to create fame, and incidentally dollars for

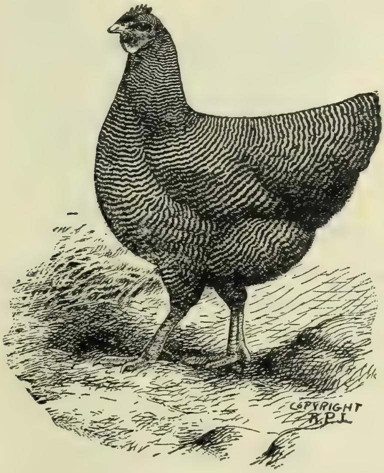


Barred Plymouth Rock Cock.

himself. The champions of each variety make most extravagant claims for superiority for their pets over all other varieties. These claims by so many only add confusion to the novice, and he jumps from one to the other and only too often mixes them all up and quits in disgust.

To my mind one can count on the fingers of one hand the number of breeds of real practical merit that should receive the consideration of the farmer and poultrymen, if he is going to get the results for his care and feed. When it comes to the "show down" the hen that pays is the hen that lays. Also, you can count on the fingers of both hands the number of varieties that have the qualifications of the Canadian business hen, when we consider eggs and meat—the essential qualities.

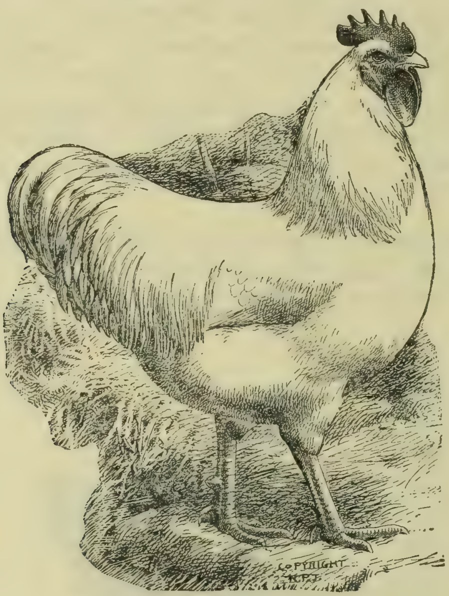
As to which is the best breed opens up such a debatable question that perhaps it is wise not to assert which, in our mind, is the best breed, We leave that to each individual poultry-keeper to chose one or more of the popular varieties for himself. But no novice or farmer should keep more than one variety to get the best results. It is generally understood that we succeed best with the breed we prefer rather than having one forced upon us.



Barred Plymouth Rock Pullet.

SELECTION AND MATING.

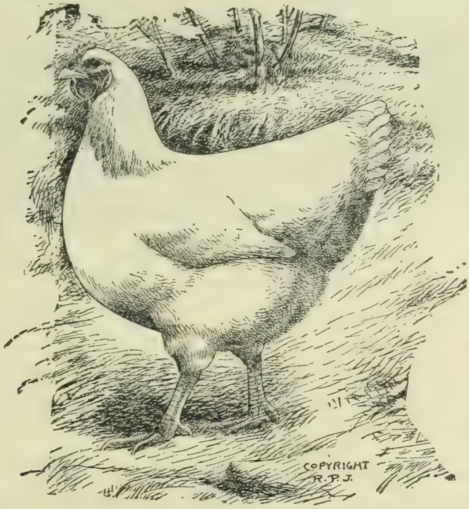
The great elementary principals of poultry breeding are: (1) Constitutfonal vigor and physical perfection. (2) Breed shape.)3) Color and plumage: (4) Comb and head appurtances; (5) Beak and legs. It is conceded on all sides by those that have had long experiənce in poultry keeping that one's success in incubating, broodfng and growing stock depends very largely upon the vitality of the breeders. This being the case, constitutional vigor should be the basis for selecting and mating our breeding stock. But how constitutional vigor is to be built up and retained is the vital question. To my mind the best method is selection from tested stock. That is, select your best pullets and test them the first year. By the term "tested" I mean a pullet that has been tried and has proved as a layer and breeder. A pullet is a very uncertain quantity and, if we are to rapidly improve our strain, no hen or pullet should be admitted to our advanced breeding pen without spending the first year under observation. The trap nest is the best method of telling the pullets laying qualities, then by marking her eggs and testing her breeding qualities. Many pullets' eggs fail to hatch even a small percentage of chicks. If a certain pullet proves to be a good layer and her eggs well fertilized during the breeding season and by marking her chicks and they thrive and grow rapidly, and her pullets mature early and show no bad defects in



White Plymouth Rock Cock.

color, type or constitution, then it is safe to put her in your advanced breeding pen from which we get our improved stock.

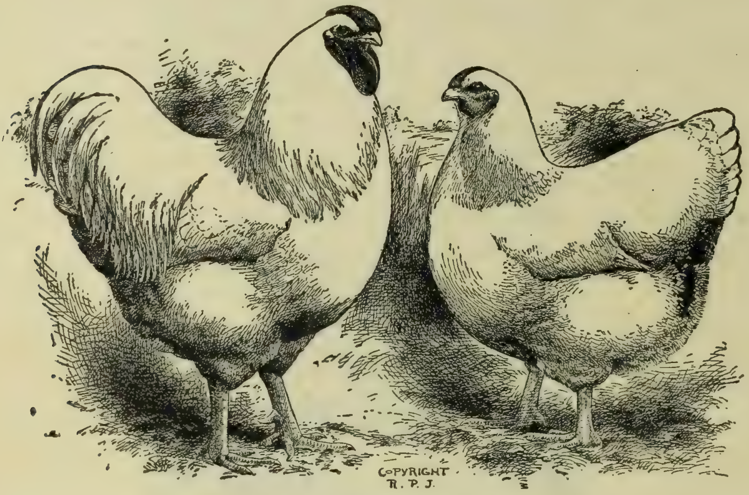
One of the greatest errors practiced today in breeding poultry, by ninety per cent. of the farmers and poultrymen as well, is indiscriminate flock breeding. Eggs are just selected as they come to them and no knowledge as to which hen laid it, whether she be good, bad or indifferent. No one has ever got very far up the hill to success in poultry breeding that had followed that slip-shod method. It does not matter whether you are breeding for show or utility—this selecting and testing is what counts for success or failure. If this precaution is important in regard to the females it is even more important in the selection of the male. Always remember that the male bird is the improver of the flock. It is from these tested females that are placed in the advanced breeding pens that we are able to get the males that are calculated to improve our flocks, both for egg production and color. This is a matter of great importance to every poultry breeder. At one time the male bird was regarded as just one of the flock. But on investigation it became generally known that he was half of the breeding flock, and so wonderful is the influence of the male on his offspring that many authorities maintain he is two-thirds of the flock. This applies to both exhibition and utility matings. In matings for shape and color have the male strong where the females are weak.



White Plymouth Rock Hen.

WHAT TO SELECT.

Size—Those nearest standard weight should be selected for breeders, as there are many reasons why those that are either oversized or undersized should not be chosen. The large ones are clumsy and inactive; this applies more to males than females. Undersized birds should be rejected as the tendency of all breeds is downward rather than upwards in regard to size. Uniform size in both male and female gives the best results.



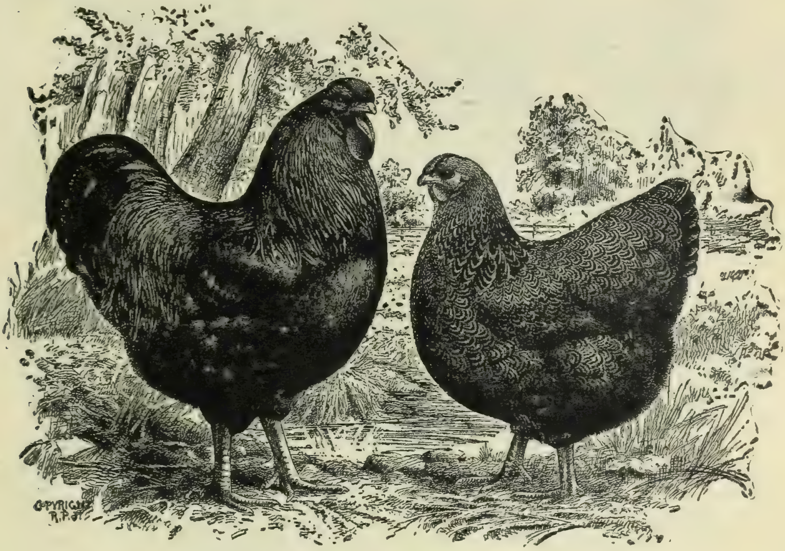
Pair White Wyandotte Fowls.

Head—The head is not only a fine index to the general health of the specimen, but shows alertness, vigor and snap. If the head is too small and refined it indicates lack of vitality The best specimens have a medium sized head with short curved, stout beak which denotes strength. The eye should be of good size, bright, clear, and in color red or bay with a snappy expression. Comb good, and face a good healthy color.

Neck—This portion of the bird should not be too long, but fairly short, as such a neck indicated strength.

Back—The back should be broad and straight, not only broad across the shoulders just back of the neck, but the breadth should be carried back to the tail. One of the great weaknesses of birds is the narrowing of the back from the shoulders to the tail. This section is an extremely important part of the specimen as it forms the framework of the body. This portion of the body should be long as well as broad, but we do not want the length to be out of proportion to the breadth and give the body a narrow appearance.

Tail—The tail should be of medium length, well spread, and carried at about 45 degrees. Nothing looks so badly as a high pinched tail.



Pair Partridge Wyandotte Fowls.

Breast—From a utility standpoint of view the breast is the most important part of the specimen as it contains more meat proportionately than any other part, It should be deep round, full and broad. Avoid those birds that have narrow, sharp or flat breasts that are cut up too much just in front of the legs. A specimen having a full crop must not be mistaken for one having a full breast. We naturally think that a fowl with a good strong breast has a great deal of vitality.

Legs and Toes—The legs should be fairly short in a good breeding specimen; also, stout and set well apart. Such legs are evidence of sturdiness and vigor. The shanks should be of good color, orange or yellow, on all varities that the standard calls for yellow legs. Legs other than yellow or white do not look well on dressed poultry when put on the market.

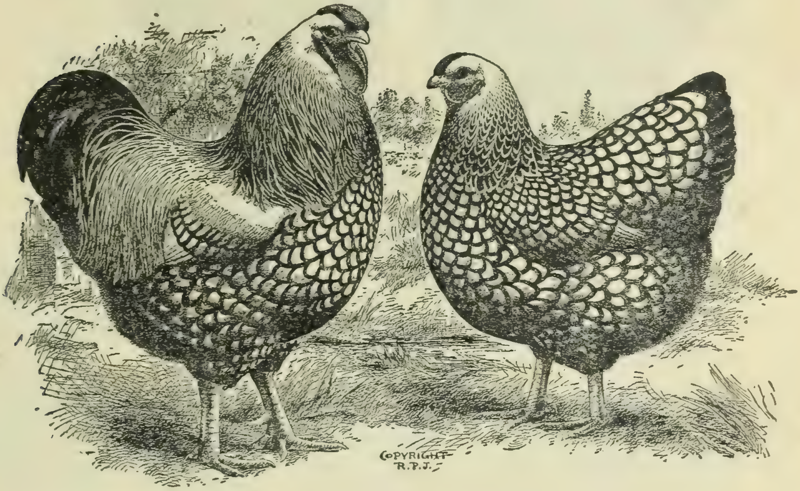
Pair Buff Wyandotte Fowls.

THE KIND TO REJECT.

Never select a bird that has ever been sick as a breeder. A fowl that has been very sick, though apparently completely recovered before breeding season, should never be used. The chicks from such parents are apt to lack constitutional stamina and are always weak in the parts effected by the disease the parents had. No one should select for a breeder a specimen that has the following characteristics—long slim back, crow or snake head, sleepy eyes, long neck, narrow breast, roach back, pinched tail, long, slim legs and toes, extremely shallow abdomen, or a bird which is deformed in any way. Specimens of this description either have heriditary taint, inbred, or have been grown under conditions that are far from ideal, or they are overloaded with disease germs or worms.

Color—Color, after all, is one of the great essentials in poultry mating. It is the first thing that attracts one's attention to a bird or a flock. Even the man who breeds for utility alone cannot afford to ignore the color question if he is to establish a business flock of his favorite breed. Generally speaking the novice in poultry breeding is not so likely to make mistakes in color as in shape,. Color differences are more pronounced. But do not get away from type or shape too far even for the sake of color. To be successful at shows, even small shows, shape and color must be had if you are to get your share of awards.

Matings—There are two kinds of matings in vogue that are practiced by the fancier: standard matings and double matings. Standard mating is that when you select male and females of the same breed that come nearest to the standard requirements and make a single mating so called. This is highly successful with solid colored plumage breeds such as white, black, buff and red, but, with the partly-colored breeds, it is not so successful in producing cockerels and pullets to standard color. Hence, the double mating system. In mating white birds avoid creamy, straw, and brassy colored specimens. The real silvery white bird is as hard to produce as any color I know of. Select birds that are white in web and quill of the feathers, especially so in wings and tail. If they are pure white in those sections you will never see the brassy surface even in summer.



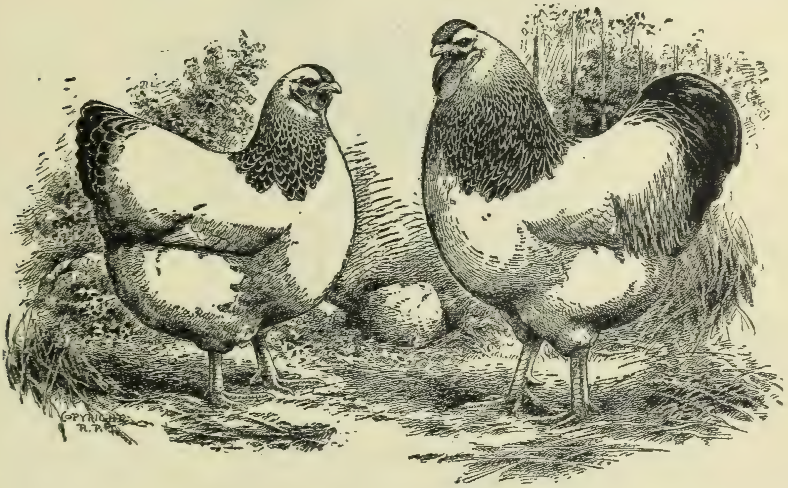
Pair Silver Wyandotte Fowls.

In mating black birds, avoid the purple and plum color on the surfaces especially the strong purple bars. That green sheen that is so admired is the shade to select in the male birds while the females should have a clean smooth black. If both cock and hen have strong green sheen they produce offspring with purple in most every section, which is not desired.

Pair Golden Wyandotte Fowls.

The double mating system is a special mating to produce high scoring cockerels from one mating and high scoring females from another mating. This system is practiced in breeding Barred Plymouth Rocks and Brown Leghorns. It has been found next to an impossibility to get a high scoring Barred Rock cockerel and pullet from the same parents when judged by our Standard of Perfection, the guide of all judges at our exhibitions. To my mind the exhibition Barred Rock bird is the handsomest domestic fowl we have.

To produce these beauties select the very best exhibition male to head the pen. He must be a bird of standard weight, or a little over, with broad full breast, low, evenly serrated comb, solid red ear lobes, bay eyes, broad, well-curved back, nicely curved tail, carried low, and strong, rich, yellow legs, set well apart. In color he should be a rich dark blue, even all over, and as closely barred as possible to retain distinctness, with wings and tail distinctly barred throughout. Get all the under color possible with such a surface, but do not let the surface suffer for the sake of heavy under color. I do not want the under barring so strong and heavy that it destroys the beautiful blue of the surface. It is a fact that very heavy under color in males gives the surface that "dense" muddy, blurred black bar that seems to run together and produce a sheen that has the appearance even of brassiness in summer. It is also a fact that the two qualities do not breed well together. The beauty of a fowl is what we see; while I am a firm believer in good under color of nice distinct bars, but not to the extent as to destroy the specimen's surface beauty.



Pair Columbian Wyandotte Fowls.

Mate with this male eight or ten females of the same line or in other words, females whose sire and grandsire were high scoring exhibition males of the type and color I have described above. Select females of standard size with small, evenly serrated combs, bay eyes, blocky shape, broad backs, low well barred tails. In color these females should be several shades darker than exhibition color, the bars to be narrow and close together in all sections, with under color strong and distinct to the skin. With these strong colored females you can get all the under color in the male product that it is possible to have with a brilliant high-colored surface.

Single Comb White Leghorn Cock.

To produce pullets of high class exhibition color select females of the best exhibition color, evenly and distinctly barred down to the skin. Be particular that the neck is evenly and closely barred and not lighter in color than the back and body. Have the main tail feathers and tail coverts well barred across the feather. Females are liable to fail in these sections unless care is exercised in the selection of the breeders. Have them standard weight. For the information of those not having the Standard I will give the standard weight of the Barred Plymouth Rock in table form:

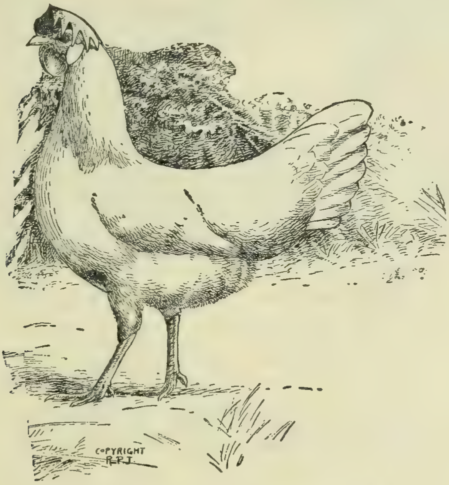
BARRED PLYMOUTH ROCKS.

Standard Weights.

Cock	9½ lbs.	Hen	7½ lbs.
Cockerel	8 lbs.	Pullet	6 lbs.

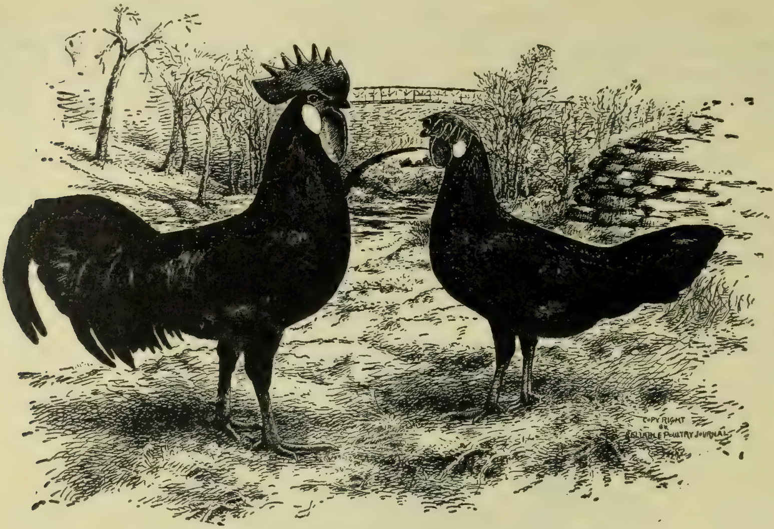
When possible breed your hens in one pen and the pullets in another. They seldom get on well together as the pullets are shy and bossed about by the hens, with the result that the hens appropriate more than their share of food and become over-fat, while the pullets are underfed and cannot do their best. Whether they be hens or pullets, have them of the same shape, type and characteristics as described above If these females have been bred in line for several generations the offspring will be more even and uniform than their mothers.

With these females place a male of medium light color and of even shade all over from head to tail. In size, shape and type he should be of the same form as the male of the cockerel line, but in color many shades lighter and of course his under color cannot be strong in all sections. Be sure his wings and tail have broader white bars than the dark bars; this will insure better wings and tails in his pullets, and he will be more distinct and cleaner in those sections.



Single Comb White Leghorn Hen.

Brown Leghorn Mating —To breed up to Standard requirements Single Comb and Rose Comb Brown Leghorns must come through the double mating route as well as the Barred Plymouth Rock. The exhibition Brown Leghorn male and female are too extremes in color—not one particle of color of the one can be discerned in the other—hence the double system of mating to produce what the Standard demands. To produce Brown cockerels get an up-to-date exhibition male with nice, even low comb with five points that run even on top line. Comb should not conform to shape of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Pair Single Comb Black Minorca Fowls.

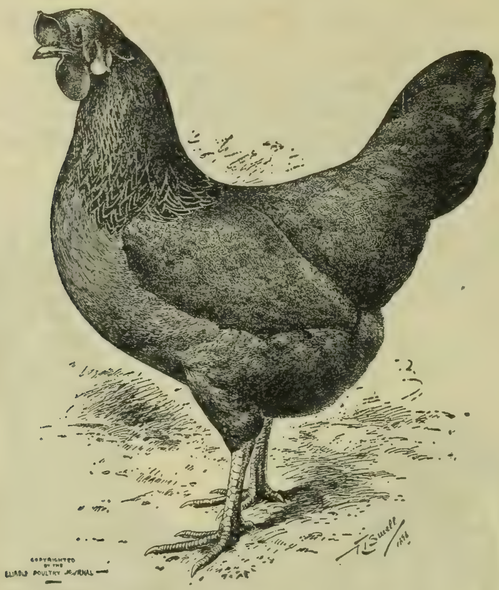
neck, ear lobes almond shape and white, back with pronounced concave sweep to tail, without any break where the back ends and the tail begins, tail well spread and low, (about 45 degrees is the proper angle) breast very full and round, with a fairly long body set well up on a pair of medium length legs that are set well apart. The color of this bird is all important. Beginning with his neck he must have a very rich red hackle. and through each red feather he must have a black stripe with a green sheen. This black stripe must taper to a fine point before it reaches the end of the hackle feather. In other words, the red must always surround the black on the surface. One of the great faults of male birds of this breed is that the black runs through the red and ends with a black tip. This causes the bird to have the appearance of having a black cape, which is all wrong. Then his saddle is of next importance. His saddle should be the exact color of his hackle, an even shade all over the top and just as well striped as the hackle. Breast color, solid green black with no red frosting or edging, Tail a strong black with green sheen, free from purple bars. Wings black with flights edged with brown or bay color, and the secondaries half black and half brown so as to form the wing bay when folded; have wing bars free from purple, and remember white in any part of the plumage is a disqualification.

For this male select females that have been bred for years from exhibition sires of above description. These females must have low, evenly serrated combs, with five points preferred, red eye, no trace of white in face. Hackle to have clear black stripe through each feather, and laced with a golden yellow that extends all way round the end of each feather or hackle. The back color should be a very dark brown, many shades darker than exhibition color, and in my experience I have had greater success with hens that had the same color on breast as on the back—they have given me my richest colored cockerels with intense striping.

Single Comb Brown Leghorn Cock.

High class females of the Brown Leghorn is one of the rarest females. I find in our average Maritime Province shows, this applies to all our provinces down by the sea, an up-to-date exhibition Brown Leghorn hen or pullet is a work of art and I found only one that suited me in the shows of 1913-14.

Pullet mating from Brown Leghorns is made from the female side of the pen. Get the best exhibition females you can, whether few or many, and your success will depend on the blood lines that your matings are composed of. The modern show female is one of the most difficult to breed, true to Standard requirements of any of our popular varieties. In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Single Comb Brown Leghorn Hen.

the first place these females must be true to type of our modern Leghorn, up standing, medium long on back, with tail at about 50 degrees—this produces a back of beautiful concave sweep. This, with a round full breast gives you a bird very stylish and sprightly in appearance. In color these females have a hackle of golden yellow with a black stripe extending down the middle of each feather and tapering to a point near its extremity. Back is the hard and all-important section in color. Feathers must be of a soft, even brown that is not suggestive of gray. On the wings in any section must not run to brick or reddish color, an even color all over back and wings without any shafting is most important. The light brown predominates finely stippled with darker brown and sharper in the definition of these colors the better. The breast of an exhibition female is a rich salmon. If these colors are in your breeders in these sections there will be no question about the other sections being good.

Mated to these females select a male that has been bred from good exhibition females. He will be of very much different color than the exhibition male in the cockerel mating pen. Be sure to select one with a neat fine texture comb; if he is coarse in this section his pullets will develop too much comb and be coarse. Have him standing and stylish, good length of back, with a nice well spread low tail. His color in the hackle should be a light orange color with fairly strong strips of black in each feather that terminates before it reaches the extremity of the feather. Have his back an even orange shade with no shafting of light lemon color or black stripes. It is from this kind of back in the male we get the soft even shade of brown in his pullets, free from shafting. with good healthy breeders and selecting your specimens each year with care your success, I believe, is assured in the show room, if you follow above directions with care.

CO-OPERATIVE EGG CIRCLES THEIR RAPID BUT HEALTHY GROWTH IN PRINCE EDWARD ISLAND.

By

T. A. Benson, Dominion Poultry Representative for Prince Edward Island.

The question "What is a Cooperative Egg Circle?" may very reasonably be asked by any who have had no experience in connection with such an Association.

This question can I think be best answered in the words of Mr. W. A. Brown, B. S. A., in pamphlet No. 4 issued by the Poultry Division of the Live Stock Branch, Department of Agriculture.

A Cooperative Egg Circle is an Association organized among farmers for the purpose of marketing eggs frequently and regularly through a common medium. The object is to improve the quality of the eggs as they leave the farm, and to place them in the hands of the consumer with the least possible delay, and in the best possible condition.

That the Egg Circle Methods of marketing are based upon absolute honesty and fair dealing cannot be denied, and it can also be claimed that this clean dealing, and the simplicity of working are in a large measure responsible for the success achieved by Egg Circles so far. The ordinary and evil system of marketing which still so generally prevails is well known to all farmers and some other producers of eggs.

It may be well, however, to emphasize the outstanding weak points which are, a flat rate for all classes of eggs, good bad, or indifferent, delays in placing the eggs in the hands of the consumer, unnecessary handling, and consequently too many profits to be paid.

Space will not allow of a description of the improper conditions under which eggs are held and travel to the markets, resulting in a heavy charge against the producer and consumer, the proportion of which charge amounts to at least if not more than 17% of the value of the total egg production of the Dominion.

This antiquated system of marketing discourages the producer in taking an interest in careful and correct methods of handling his poultry and caring for the produce, and places a direct premium on slovenly methods.

The objects then in placing this new method known as the Egg Circle System in the hands of the farmers or producers are to at least greatly minimize the waste and unnecessary handling, and bring the producers and consumers into closer touch. By this system eggs are paid for on a quality basis, those marketing good sized, clean, strictly new laid eggs receiving the full price, stale, dirty, very small, and other inferior eggs being paid for at lower prices, and bad eggs not being paid for. It is so arranged that every egg can be traced to the producer, each egg being stamped with the number of the Association and the number of the member whereby correct methods by the producer are encouraged and well paid for.

Careful methods of handling the eggs after they leave the hands of the producers are insured, the eggs being placed as quickly and directly in the hands of the consumers as possible. It is not sufficient that the producers of eggs should know that the eggs leave their hands in good condition, it is each producer's duty to know something of the way their produce is handled on the way to the consumers, and to co-operate in working for this end. In other words it is the duty of our producers in the first place to strive to obtain closer touch with the consumers, and it is in the interests of both producer and consumer to co-operate in bringing this about.

As a word of warning I would say to the producers that this condition is such an urgent need to the welfare of this Country that its consumation sooner or later is assured, and that if it originates with the producers so much the better for them and the degree of perfection to which this condition will be brought.

If it is desired to organize an Egg Circle a well advertised meeting should be held in the selected district, and the foregoing carefully reviewed. Then if the meeting is in favor of organization a Constitution and By-Laws should be adopted, seven directors and officers elected, and a managing collector appointed.

There are several different methods of collecting the eggs and managing the Association which local conditions will govern.

All information in this connection can be obtained from The Poultry Division of the Live Stock Branch, Department of Agriculture, Ottawa, which Department is supporting and extending this work in various parts of the Dominion The writer was connected with this undertaking for about two years in Ontario, under Mr. J. H. Hare, B. S. A. (now in the Dominion Service) where great success was achieved and has continued to attend the Movement. In many other parts of the Dominion, notably British Columbia, Quebec, Nova Scotia, and New Brunswick, this work is going on, but in Prince Edward Island an almost phenominal, though healthy development, has taken place. Shipping commenced on May 10th, 1913, by one Egg Circle, and by the end of December, 1913, twelve egg circles were in active operation, the results obtained up to that time are illustrated by the following figures—

Total number of dozens shipped	53,584
Gross value to circles	$14,190 11
Amount distributed to members	13,561 42
Value reckoned at prevailing store price	11,881 06
Gross profit to circles	2,302 05
Net profit to members over and above local store price	1,673 36
Cost of Collection	628 69
Average cost of collection per dozen	.0115
Greatest number of circles shipping at one time	9
Number of members participating varied (according to number of circles shipping) from	36 to 359
Total membership (December 31, 1913) over	500
Average gross price per dozen to circles	26.5c
Average net price per dozen to members	25.3c.
Average local store price per dozen	22.18c.
Net profit per dozen to members over local store price	3.12c.
Highest average price received by members (December)	45c.
Lowest average price received by members (May)	18½c.
Highest average local store price	32c.
Lowest average local store price	16c.
Lowest average net profit per dozen to members (May and June)	1c.
Greatest average net profit per dozen to members (December)	14c.

There are now 65 Egg Circles organized in Prince Edward Island with an aggregate membership of more than 5, 500 farmers shipping about 2,000 cases of eggs weekly and notwithstanding stubborn opposition on the part of those who consider their self interests at stake, and what at times looked like almost insurmountable difficulties the work has been and is going steadily forward, and the membership of almost every circle increasing. On March 18, 1914, The Prince Edward Island Co-Operative Egg & Poultry Association was organized and later incorporated by an Act passed in the Provincial Legislature, and to which all the separate Egg Circles are federated.

This Central Association is showing its usefulness in a practical manner and bids fair to bring about the ultimate complete success of the Movement.

Although it is not claimed by any means that the Movement has reached a state of perfection the progress made speaks volumes for the progressive spirit and energy of the Island farmers. They evidently intend to grasp what they are clear sighted enough to recognize as a great opportunity to elevate this wonderfully promising and important poultry industry, and have their little Province recognized as a leader in the Dominion.

IMPROVING CANADA'S DRESSED POULTRY.

A Historical Sketch of the Commencement of this work by the Dominion Government.

By F. C. Elford, Dominion Poultry Husbandman.

Canada is primarily an agricultural country and draws much of her wealth from the soil. As a nation we have grown tremendously in numbers, wealth and influence during the past quarter century, and this development is still progressing at an astonishing rate. This is especially true of our great wheat producing territory in the west, where countless towns are springing up and unnumbered farms established on virgin soil which yields banner crops of the principal cereals.

It is not to be wondered at that in sparsely settled regions the poultry industry is apparently neglected, and previous to the closing decade of the last century this particular agricultural industry did not amount to much in Canada. Of course, it had been developed in certain sections, especially in Ontario and Quebec; but taking the country as a whole, the poultry population was relatively small. The census of 1891 records approximately 14,000,000 head of poultry, but no figures are available regarding the number and value of eggs produced or the birds killed and sold. Possibly the census officials felt that these items were not of sufficient importance to make note of.

FORMER PRICES LOW.

At any rate, at the date mentioned eggs sold as low as 6 and 7 cents per dozen and dressed chicken at 25 and 30 cents per pair, and even at these figures they had to be "traded out" at the store. True, these prices may have represented the actual worth of the goods, as the quality must have been poor. No attention was paid the hens. Eggs were gathered when most convenient and marketed when groceries were needed. The chickens were never especially fed for fattening. In fact, a large proportion of them never had any food excepting that they "rustled" for in farm yard and field. It goes without saying that the eggs could scarcely be termed fresh and that the chickens were lean, muscular and tough.

At this same time dressed poultry was bringing good prices in Great Britain, and Prof. J. W. Robertson, Live Stock and Dairy Commissioner of the Dominion, began an investigation of British methods of fattening and marketing poultry, in the hope of opening up an export trade in Canadian chickens.

Agents visited the chicken-fattening section in Sussex and learned what they could regarding the methods followed there and the centres of distribution to get in touch with market requirements. It was decided that these methods could profitably be adopted by Canadian poultry growers and shippers, and steps were immediately taken to disseminate the information thus secured among those most interested.

Prior to this time, in fact, since 1885, experimental work with poultry had been conducted at the Central Experimental Farm, but the proposed "fattening stations" were special, an extra, so to speak, and were for the purpose of taking directly to the farmer what every farmer had not been able to see for himself—the methods and appliances used in countries where the chicken-fattening industry had been developed. This special work was placed under the supervision of Frank C. Hare, now connected with the United States Department of Agriculture at Washington, and on the splendid foundation laid by him the plan has been developed, to the great advantage of the industry in Canada.

ENGLISH TRADE DESIRED.

It must be remembered that the primary object of these demonstrations was to educate the producer to so finish, dress and pack his chickens as to make them acceptable to the then more desirable markets of England. At that time a great change was taking place in Great Britain in the matter of classes of food stuffs most in demand. Whereas the English diet used to be one of beef and bread and cheese, it was becoming in large measure one of bacon, ham and chicken. This naturally brought about a great demand for these staples. Canadian ham and bacon are moving well in the channels of English trade, but our chickens were much below par, for reasons explained above. Therefore, we adopted the English method of fattening in order to make them acceptable to our relatives across the sea.

The earliest test of this method was conducted at Ottawa. Chickens of average quality were purchased alive on the market at the rate of 38 cents per pair. They were placed in fattening crates and fed heavily for a few weeks on finely ground grain and skim milk. These birds made a great gain in weight at a food cost of 6 3-4 cents per pound, and every ounce of chicken meat was vastly improved in quality.

Now the greatest cost of producing these chickens was during the many weeks they were growing. The fattening process involved but a short space of time, and right here the money value was put into the stock. Consider the following figures, which are enlightening to any one unacquainted with the possibilities of this finishing process.

Three representative chickens were selected from the lot just as purchased and dressed before fattening. Bled and plucked, they weigh 8 pounds, 8 ounces, and the edible portion, the meat remaining after the removal of heads, feet, intestines and all bones, weighed 2 pounds, 6 ounces after boiling. Three similar chickens after fattening weighed 16 pounds 4 ounces when bled and plucked, of which 7 pounds, 6 ounces was edible after cooking. In other words, one fattened chicken carried as much meat as three that had not been crate fed.

PRACTICAL DEMONSTRATION WORK:

As above stated, the idea was to take this work directly to the farmer, to teach him to finish his own chickens and so secure all the profits to be derived from them. Accordingly fattening stations were established, two at first, but many more as the complete success of the plan became apparent.

These stations were located on farms, in direct charge of the farmer himself. The equipment in each case consisted of a few fattening crates, shaping frame and boxes for packing. Chickens of good utility type were secured for fattening and different rations used, according to the current prices of grain in each locality. The birds were killed, dressed, shaped and packed according to approved methods, after which they were marketed. The stations were in operation from two to four months each season, in the fall and early winter.

These stations were of great practical assistance to the farmers in the sections where located. They afforded an excellent opportunity for the various producers to actually see for themselves just how the work was done and what it accomplished, and as a result, numberless private fattening establishments were put into operation. Each government station was operated for several years, depending upon the conditions existing in the territory which it served, and was then dropped or removed to another section. In this way the farmers of Canada have practically all learned how to fatten poultry, and the experiment work at present is being largely handled through the experimental farm system.

It is difficult, in fact, impossible to estimate the value to the farmer of this demonstration work. However, we can cite one concrete example, which will show what it has accomplished in one locality near Lake Huron, in Western Ontario. A fattening station was established near the little village of Holmesville, though the poultry crop in that section amounted to practically nothing and the growing of chickens was considered beneath the dignity of a full grown man.

When the government station was discontinued the work was taken up by a farmer's son, who was engaged in teaching the local school. After two years this young man gave up his school and devoted himself exclusively to the poultry business. Last year he handled 229,000 dozens of new-laid eggs and 204,148 pounds of dressed poultry, for which he paid the farmers of the locality $70,000 in cash. In this short space of time the poultry crop has become one of the big money crops of this section, to the benefit of the producer, buyer, transportation company, dealer and consumer. Today the poultry business in that locality attracts the very men who formerly scorned it.

In order to give some idea of the increase in value secured by proper fattening chickens let us consider some figures. The very first lot of chickens fattened at one of the pioneer stations, Carleton Place, Ont., in 1899 gave the following results:

Number of chickens	120
Total cost	$29.34
Cost per chicken	.23
Gain in weight	283 pounds
Gain per chick	2.2 pounds
Cost per pound gain	.06½
Selling price in England	.75½

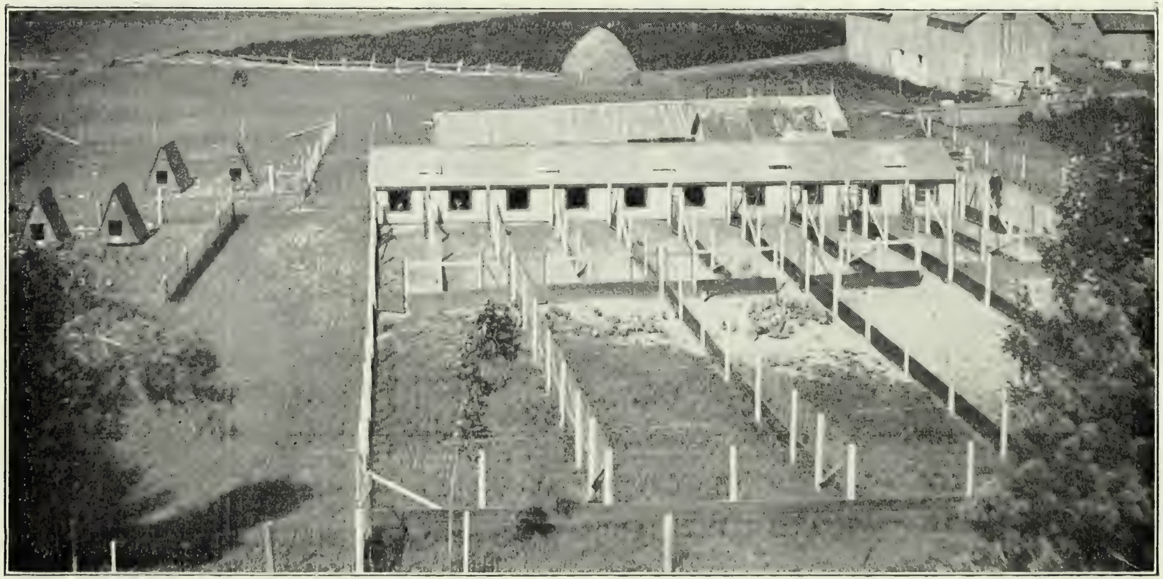
Now analyze this. Each chicken sold in the Canadian market at 23 cents. The cost of fattening each amounted to 14.3 cents, making a total cost of 37.3 cents per bird. The profit realized amounted to 38.2 cents per head, from which must be deducted the cost of dressing and shipping, only a few cents per bird. This profit figured on a percentage basis was astonishingly large and was secured solely through the adoption of the simple fattening process.

BETTER RESULTS OBTAINED.

As experience was gained better results were secured. Five years later the following results were obtained at the station at Bowmanville, Ont.:

Number of chickens	434
Total weight	1332 pounds
Cost	$93.24
Cost of feed	23.65
Total cost	116.89
Gain in weight	594 pounds
Cost per pound gain	3.9
Dressed weight	1573 pounds
Market value	$204.49
Profit	87.60

This statement does not show the actual profit on this lot as it sold for 15 cents per pound, while the figures given are at the rate of 13 cents per pound, the figure offered for the output of all stations. On the 15 cent basis the selling price would be $235.95 and the profit $119.06, a trifle over 27 cents per head.



A Breeding Station, one of the poultry breeding stations as operated by the Dominion Department of Agriculture when Hon. Sydney Fisher was Minister of Agriculture.

These chickens were farm-grown stock of the American class. Similar results may be obtained by any person who uses chickens of proper type and feeds judiciously on the right ration.

In all, thirty-seven stations were established, well distributed throughout the various provinces. The work was continued for several years, but is now largely in the hands of private individuals, who have established quite an industry. Fortunately it has been largely kept in the hands of the farmers, who get the profits themselves. In the United States the work is done by large concerns, who buy the chickens from the farmers and get the additional price which results from the fattening process.

The stock from the government fattening stations was sold both locally and to wholesale and retail houses in the large cities. At present the farmers sell locally to consumers or local buyers or ship to city dealers. In some cases they cooperate, having their birds killed at a central station, from which they are shipped in bulk.

During the early stages of this work it was found difficult to secure live chickens of the proper type in any considerable numbers. It has been demonstrated that pure-bred chickens were vastly superior to the common or mongrel stock, found on the average farm. The former made greater gain in live weight, made it more rapidly and economically and were uniform in appearance and quality. At no age were the scrub chickens as salable as the pure-breds. For meeting the demands of the high-class local market or for export to England, scrub chickens were not satisfactory.

BREEDING STATIONS ESTABLISHED.

This condition presented another problem for the government officials to solve, and breeding stations were established in conjunction with certain of the fattening stations. The equipment comprised up-to-date appliances for hatching and rearing chickens and modern poultry houses sufficient to accomodate 100 to 150 head of breeding birds. This stock provided eggs for the incubators and some for sale to neighboring farmers. Eggs and stock were sold at low prices, thus helping to put a better grade of stock on the farms in the adjacent territory.

The usual procedure was to keep about fifty yearling hens, 100 well-developed pullets and ten to twelve breeding males. In June, the breeding season being over, the fifty best pullets were selected to use the next season and the rest of the flock sold for breeding purposes or fattened and killed. When marketed at this season of the year, before the spring chickens are ready, good prices are secured. Yearling and two-year old hens make very tender and juicy table poultry if crate-fed for two or three weeks.

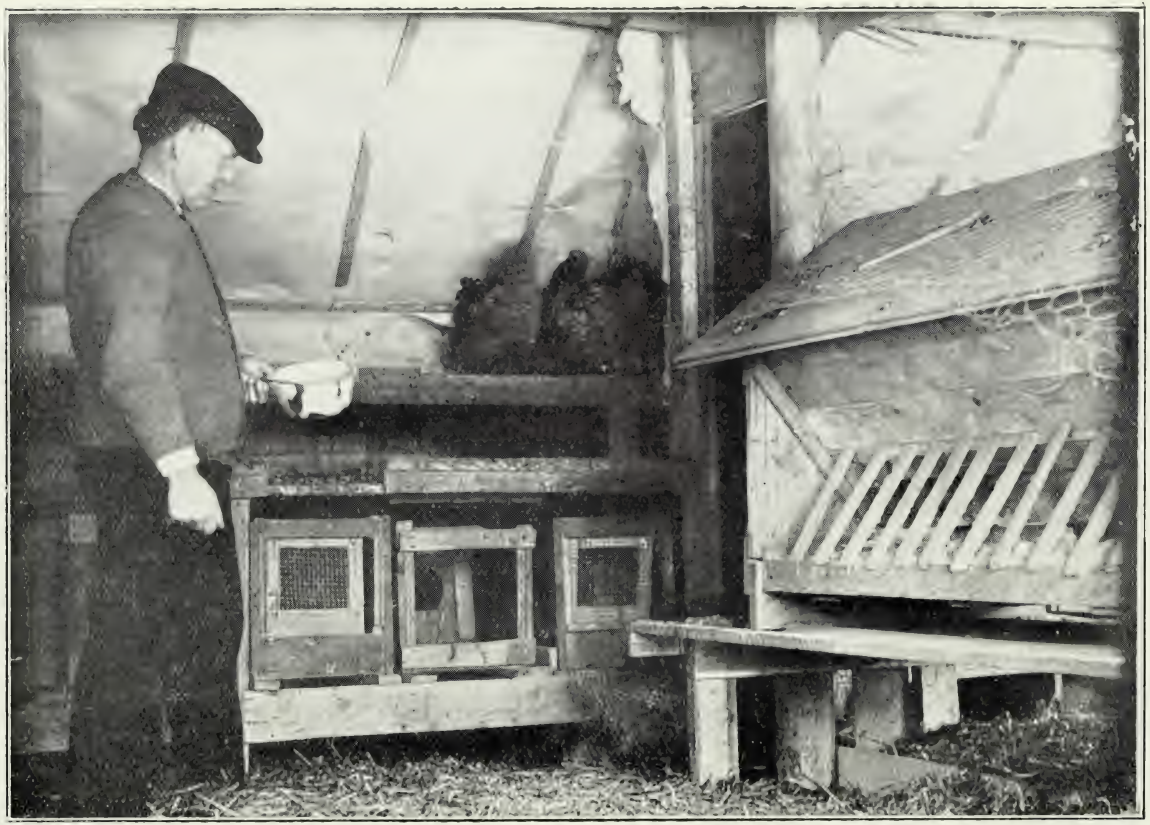
It was found that the breeding stations did not harm the trade of professional poultry breeders. Rather it increased this business. The farmers who had heretofore been satisfied with scrub chickens secured some of this stock at low prices and so became interested in their poultry flocks. As this interest grew they would turn to the professional breeders and pay the price to secure better birds, and so all classes shared in the benefits.

As previously stated, this work was begun primarily with the idea of developing an export trade. Curiously enough, it resulted in stimulating local consumption and increasing local prices to such an extent that the Canadian market absorbed the entire output. Under existing conditions, it pays better to sell at home than to export. Our production has increased tremendously, but the Canadian appetite has kept pace with it. And this has resulted from the production of "quality" market poultry. Canadians are eating more and better chickens, are producing more and better chickens. Who shall say that the results have failed to justify the means adopted to bring this about.

MAKING A SUCCESS OF POULTRY.

By W. B. Crowell, Arcadia, Yarmouth Co., N. S.

When I settled here in Arcadia, four years ago last Spring, one of my deacons, made me a present of seven hens. I had kept hens before but now I determined that they should keep me. Accordingly I secured from a number of Experimental Stations as many of their reports as they would send me. I found those of Nova Scotia and Ontario especially helpful. I also subscribed to several of the more prominent Poultry publications. Giving a careful study to the Reports and local conditions I formulated my plans. There was a small barn on the premises. On the south side an opening, eighteen feet in length and four feet high was made. This was covered with chicken wire and provided with waterproof curtains. These were, after a while, done away with, and now, summer and winter, day and night, the opening is



Interior of Poultry House of Mr. Crowell's at Arcadia, Yarmouth County, N. S. showing trap nests and dry feed hooper.

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never closed. In the north end, I put the dropping boards, roosts and nests. At first a curtain protected the hens at night. Before the first winter was past, this was taken away, and in consequence I have never had a sick bird. The floor of the barn is covered deeply with oat straw. It takes about a ton a year, and is removed Spring and Fall only. Into this all grain, whole and cracked, is scattered, and all day long, especially throughout the Winter, the birds are busily scratching for food, except such time as they are on their nests. For four years my biggest egg yield has been in Dec. and Jan. This is in part due to the exercise that comes from hunting for their food.

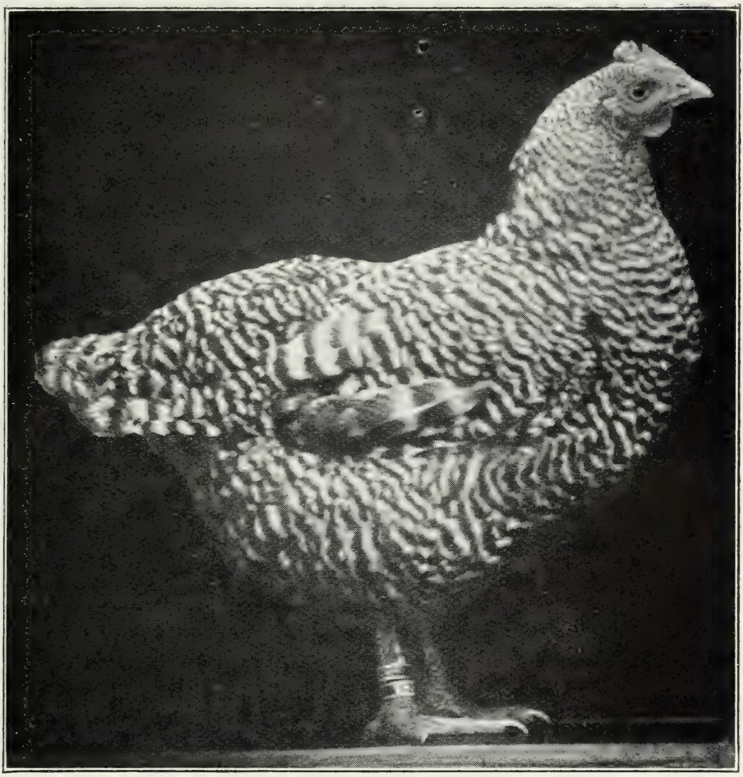
If chickens are hatched before May 1st, and grow steadily, they should be laying between the middle of October and November first. It is well to feed them twice a day on oats and wheat until a month before you expect them to lay, then for three weeks feed more heavily, using now some corn, and a little cut green bone. The last week, if they are quite fat, semi-starve them, and as soon as they begin to lay feed liberally. I have dry mash always before them, and during the winter feed the green bone four times a week. Turnips and mangels are excellent. Sprout oats will stimulate a flagging egg flow. I find that besides the bone and vegetables that Plymouth Rocks will consume on an average a quarter of a pound of grain a day. Mediterranean breeds will eat less.

My experience has convinced me that skimmed or sour milk is a very important factor in obtaining a heavy flow of eggs. The two years that I obtained my world records. I used it every day in the year, and practically during the winter it was the only drink the hens had. Last Fall, a number of pullets started out ahead of the record for the two previous years, and up to May, the leader was about 20 ahead of any previous performance. But since that time, I have been unable to secure any milk, and all the flock have fallen off. Again, last year 7 out of 9 laid all through the month. It is not this year. I consider that skim milk has a commercial value so to me of 2 cents a quart. To my mind there is no question but that farmers can get a greater money return by feeding it to poultry than they now get by feeding it to swine.

The factors which have enabled me to produce such layers as Lady Morta, 283 egg record, No. 113, 281 eggs and Lady Morley, 292 eggs, the only sworn-to world's record, are the open-front building, deep straw litter and grain scattered therein, green bone, sprouted oats, and skim milk.

RECORD IN EGG PRODUCTION OF "LADY MORLEY" FROM SEPT. 29, 1912 TO SEPT. 29, 1914.

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
MONTH 1912																																
Sept.																													1	1		2
Ocr.	1	1	1	1	1	1	1	1	1	1	..	1	1	1	1	1	..	1	1	..	1	1	1	1	1	..	1	1	..	1		25
Nov.	..	..	1	..	1	1	..	1	1	1	1	1	..	1	1	1	1	..	1	..	..	1	1	..	1	1	1	..	1	1	..	20
Dec.	1	1	..	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	28
MONTH																																
1913																																
Jan.	..	1	1	1	1	1	1	1	..	..	1	1	1	1	1	..	1	1	1	1	..	1	1	1	..	1	..	1	1	1	1	24
Feb.	1	..	1	1	1	1	1	1	..	1	1	1	1	1	..	1	1	1	1	1	1	1	..	..	1	1	1	1	..	..	..	23
March	1	1	..	1	1	1	1	1	..	1	1	1	1	1	..	1	..	1	1	1	..	1	1	1	1	..	1	1	1	1	..	24
April	1	..	1	1	1	1	1	..	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	..	28
May	..	..	1	1	1	1	1	1	..	1	1	1	1	1	1	..	1	1	1	1	1	1	1	1	1	1	1	1	..	1	1	26
June	1	..	1	1	1	1	1	1	1	..	1	1	..	..	1	1	1	1	1	1	1	1	1	1	..	1	1	1	..	1	..	24
July	1	..	1	1	..	..	1	1	1	1	1	..	1	1	1	1	1	..	1	1	1	1	1	..	..	1	1	1	1	1	1	24
Aug.	..	1	1	..	1	1	1	..	1	1	1	1	1	1	1	..	1	1	1	1	1	..	1	1	1	..	1	1	1	..	1	24
Sept.	1	1	1	..	1	1	1	..	1	1	1	..	1	1	1	..	1	1	..	1	1	..	1	1	..	1	..	1	..	..	..	20
																																292



"Lady Morley" a hen which produced 292 eggs in one year.

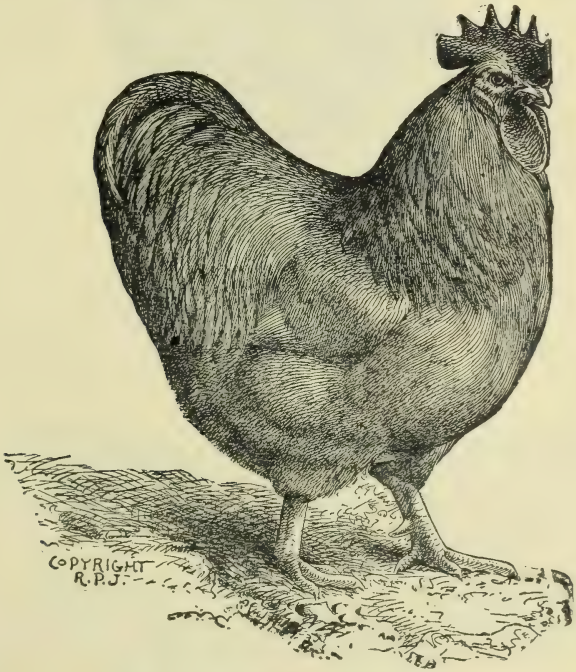
Student Feeding Chickens.

One of the most short-sighted methods in handling poultry is the permanent yard, small in extent and bare of vegetation. When you have two large yards in connection with each flock, and sow one in grain while they are in the other yard, and change them every six weeks, always planting the vacant yard with oats, barley, wheat or, occasionally, with clover, you will find that your flock will again and again repay the cost with the extra flow of eggs. This with the other factors enumerated above will enable any pullet, of a heavy egg laying strain, to reach nearly to the 300 egg mark.

BREEDS OF FOWLS.

By J. P. Landry.

In making a selection of the breed of fowls one should not pay too much attention to the breed but should look to the merit of the strain of the particular breed.

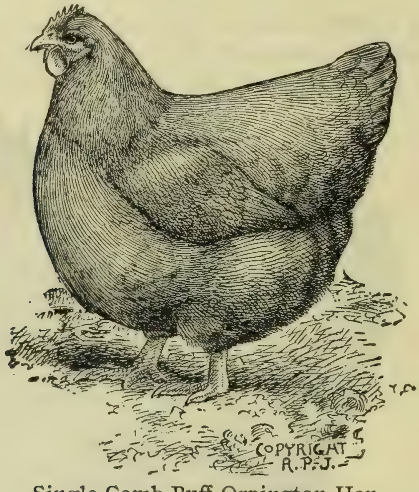


Single Comb Buff Orpington Cock.

During recent years breeds and varieties have become so numerous that a person not acquainted with the character of the classes or larger divisions of fowls will be at a loss to know which breed or variety would best suit the particular purpose for which the fowls are kept.

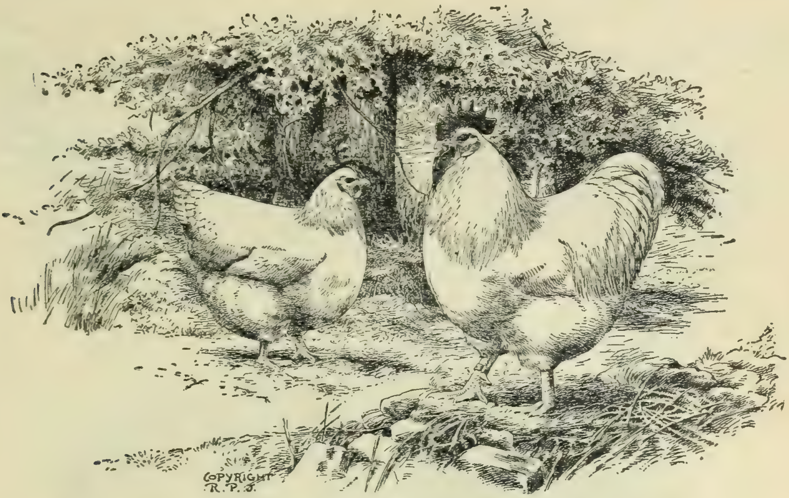
The ancestories of all our domestic fowl did not produce more than a score of eggs but by the continued selection of the best layers and those of some particular type, the characteristics and laying qualities have undergone a wonderful change. In recent years some of the successful breeders of poultry have been able to develop the laying qualities of their strain of fowls that anyone starting into keeping fowls can at a very moderate outlay obtain the result of years of improvement. The same comment holds good in the improvement in the production of fowls for table purposes as is noted in their laying qualities.

The American Poultry Association organized in the year 1873 begun the first systematic improvement in breeding poultry on this continent. A few individuals in the years immediately proceeding had done some importing of poultry from Europe and Asia. At the present time the breeds which are admitted into the Standard of Perfection are the most improved to be obtained.



Single Comb Buff Orpington Hen.

The farmer and average poultryman should not place the breed, no matter how much they may be desired, before the qualities which indicate health and robust constitution. A flock of vigorous, healthy mongrel bred fowls are likely to be more profitable and satisfactory than a flock of immature, unthrifty pure breds. It is however much more profitable and satisfactory in every way to keep healthy, vigorous fowls of the recognized breeds.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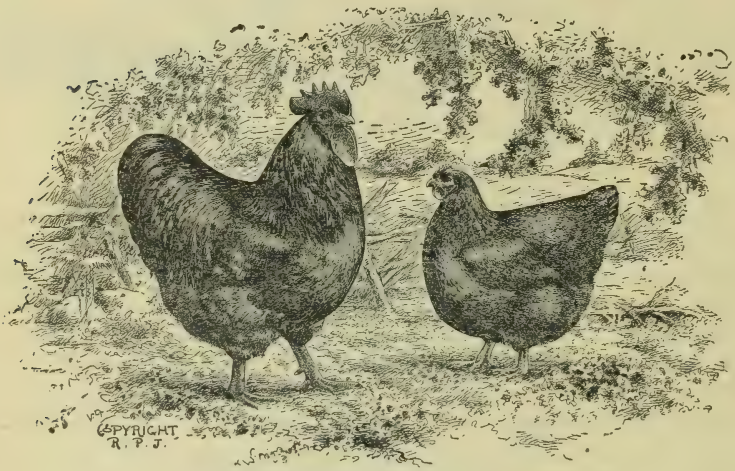
Pair White Orpington Fowls.

The qualities which indicate health and vigor are the same in all breeds. Select for breeders birds which are active, have bright red combs; stout short beaks; large prominent eyes, shanks and toes strong and stout; thighs well muscled, legs well apart on body and straight; body of a shape which conforms to the breed type and covered with a plumage which has the required markings as indicated by the Standard of Perfection. Cull out of every flock all mopy, inactive fowls; those which are listless; knocked kneed; flat breasted; crow headed; all which have at any time shown a disposition to disease, and have regard to the production of eggs in the different individuals in the flock. The use of the trap nest is recommended for this purpose when time and circumstances permit.

The American Poultry Association have at present admitted to the Standard of Perfection some thirty-eight different breeds of one hundred and nine different varieties. It is probable that at the next revision of the Standard in 1915, this number will be increased. All persons who wish to know more of the characteristics of the different breeds of domestic poultry should secure a copy of the American Standard of Perfection and become familiar with the points of difference of the more common breeds.

The first large division of domestic poultry for the purposes of classification have been made in relation to their origin and country from which they were first recognized as a distinct family of the fowls. The next sub-division has been made in relation to the shape characteristics of the several large groups of fowls and this sub-division has again been divided into many large groups of fowls according to their distinct color of feather and shape of comb.

The class or first group division of fowls are, American, Asiastic, Mediterranean, English, Polish, French and Oriental classes.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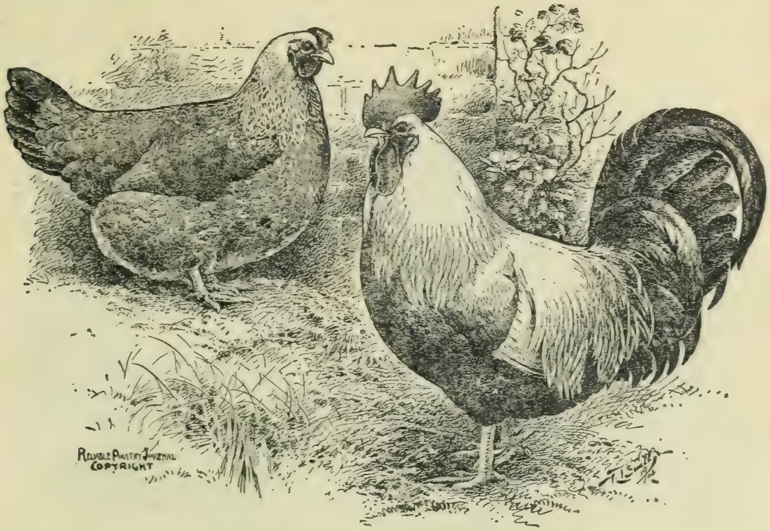
Pair Black Orpington Fowls.

The American class includes the breeds which have improved in America along the line of dual purpose, egg production and good market qualities. They are the most important and are kept by more persons than any of the other classes. They vary in weight from pullets weighing four pounds to the cock birds weighing 9-10 pounds. The principle varieties of this class are, Plymouth Rocks, Wyandottes Javas, Rhode Island Reds and Buckeyes.

The Barred Plymouth Rocks are the most popular variety of the American class and it has been stated by good authority that there are more of this variety raised each year than any other single variety.



Pair Silver Grey Dorking Fowls.

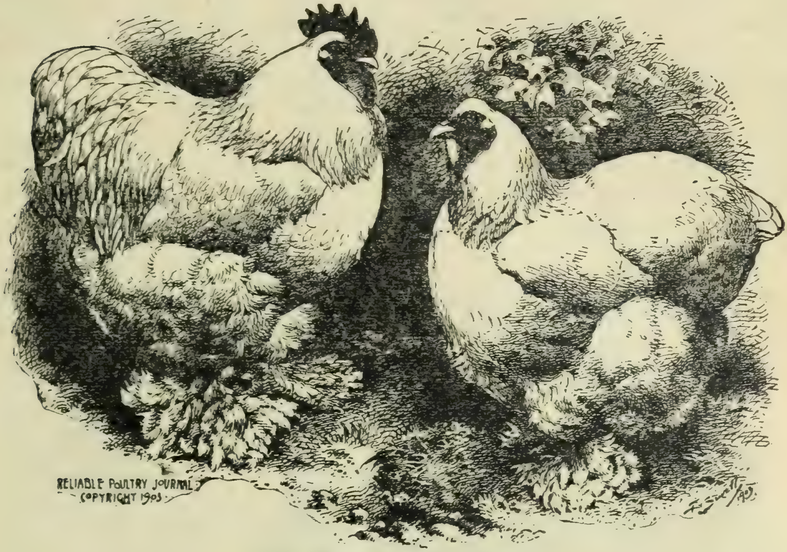
The White and Buff varieties with the more recent additions, the Columbian, Silver Pencilled and Partridge are identical in shape but have not yet attained near the popularity which is accorded to the Barred as an all-round utility farmer's fowl. They make a rapid growth and during their growing period have not much flesh but near maturity make the very large well shaped roasters which are in demand on every market. In egg production they are very prolific and if not in-bred need cause no worry from broodiness. For the Province of Nova Scotia with good feed and attention this variety is not surpassed by any and equaled only by a very few.

The White Wyandottes are the next variety which have become very popular and have taken a remarkable place in the poultryman's estimation as a fowl which can be relied on to pay good returns for feed and care. When matured they are not as heavy as Plymouth Rocks but from the experience of a good many breeders we learn that they make a very good summer chicken for table purposes. They vary in weight from pullets five and one-half to cocks weighing nine pounds. The shape of the Wyandotte fowls is a very blocky, closely formed compact body, which when dressed for the table, makes a very neat appearing chicken, commanding the very highest prices in all markets where they are offered. The other seven varieties of this breed, namely, Silver, Golden, Buff, Black, Partridge, Silver Pencilled, and Columbian give any fancier an opportunity to indulge his skill in producing specimens which will conform to the show room score card.

Pair Buff Cochin Fowls.

The Rhode Island Reds, both Rose and Single comb varieties, are as yet a very new production but have come into great favor as a farmer's fowl. They had been bred for many years in the State of Rhode Island by farmers who had not given any attention to the question of standardizing the breed and were in popular favor as a roaster and broiler chicken in the nearby markets. They were no sooner admitted to the Standard than a great demand was made for this breed and they are now very generally bred over a greater part of the Dominion of Canada. The weights are about the same as Wyandottes but the body is more of an oblong shape and not so early maturing.

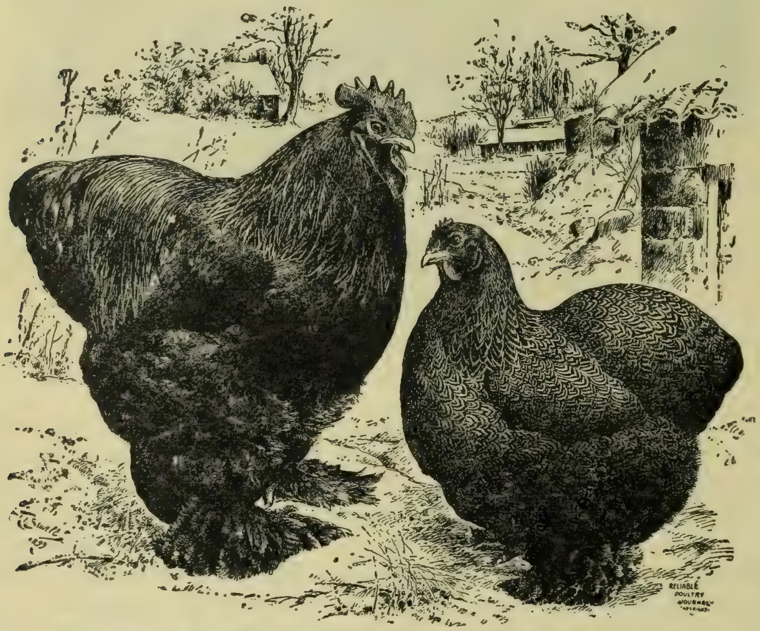
The Java and Buckeye fowls are similar in many respects to the last breed and have not many points which will surpass the qualities enumerated in them. There are but very few bred in the Maritime Provinces, and it would not be an advantage to advocate more breeds but to improve the qualities of the breeds already well established here now.



Pair White Cochin Fowls.

The Asiastic class are a group of the largest Domestic fowl and in recent years have not been as popular as in the early eighties. Since then their place has been largely taken by the varieties of the American class. Their bodies are large and when matured weigh from eight for pullets to twelve pounds for the cock birds. They are a meat producing group and are slow to mature but when used to cross with American breeds, the progeny make splendid birds for capons or large roasters. The breeds of this group are three, Brahma, Cochins and Langshans which are divided into eight varieties. All varieties have very loose feathering and a great quantity of it. Where the markets demand a very large roaster or capon these breeds will fill the bill. The short season in Nova Scotia does not prove the most favorable for the development of the best specimens of this group and they are not likely to become very popular as a farmer's fowl.

The Mediterranean group of fowls are the largest group and are noted for their wonderful production of eggs. They are very active and alert, are non-setters and are not counted as a good market fowl, but the cockerels if properly fattened make very nice dressed poultry. The class is divided into five breeds and twelve varieties. The Leghorns are the most bred and are very popular in the Maritime Provinces. They are small sized birds, yellow legs, and white ear-lobes and are very hardy and prolific. They are the best farmers egg producer of the more popular breeds. There are eight different varieties—the Single-Comb Brown, Rose-Comb Brown, Single-Comb White, Rose-Comb White, Single-Comb-Buff, Rose-Comb Buff, Single-Comb Black and Single-Comb Silver—which are identical in shape differing only in color and shape of comb. The Single-comb White are somewhat larger in size than the other varieties and our experience has led us to believe that they, as a rule, lay a somewhat larger egg. They lay a white egg and in some sections this might be an objection but it need not as the objection is pure fancy.

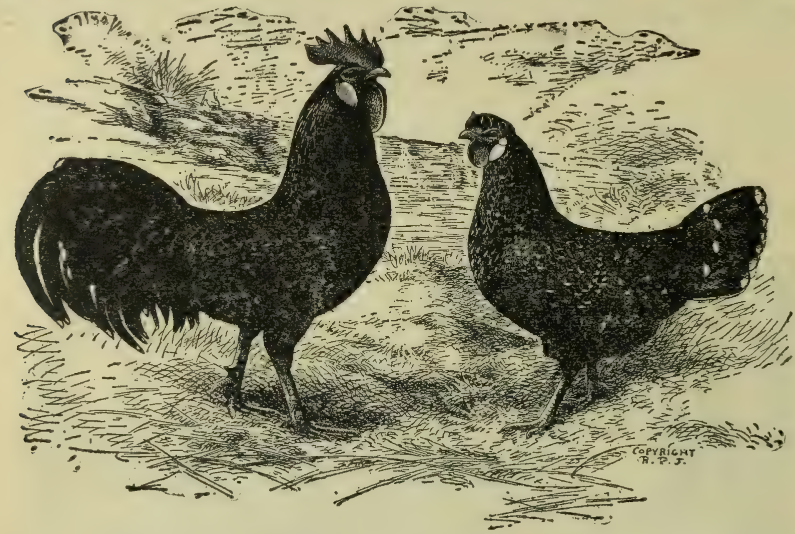


Pair Partridge Cochin Fowls.

The Minorcas are the largest sized breed of the Mediterranean class, pullets weighing five and one-half pounds, cocks weighing as much as ten pounds. They have very long bodies with large combs, white ear-lobes and a dark skin which is not to be desired in a market fowl. The plumage is very close fitting and smooth on the surface. The White Faced Black Spanish, another breed of this class are identical with the exception of the white face. At one time they were a very popular breed, but of late years have become very rare.

Pair Light Brahma Fowls.

The Blue Andalusians and Anconas have never been very popular with the farmers nor fanciers and the merits which they posses do not stand out to any very great extent beyond the other breeds of the Mediterranean group. The last named breed have some admirers in the Maritime Provinces who place them in a position or rank ahead of the Leghorns as egg producers.



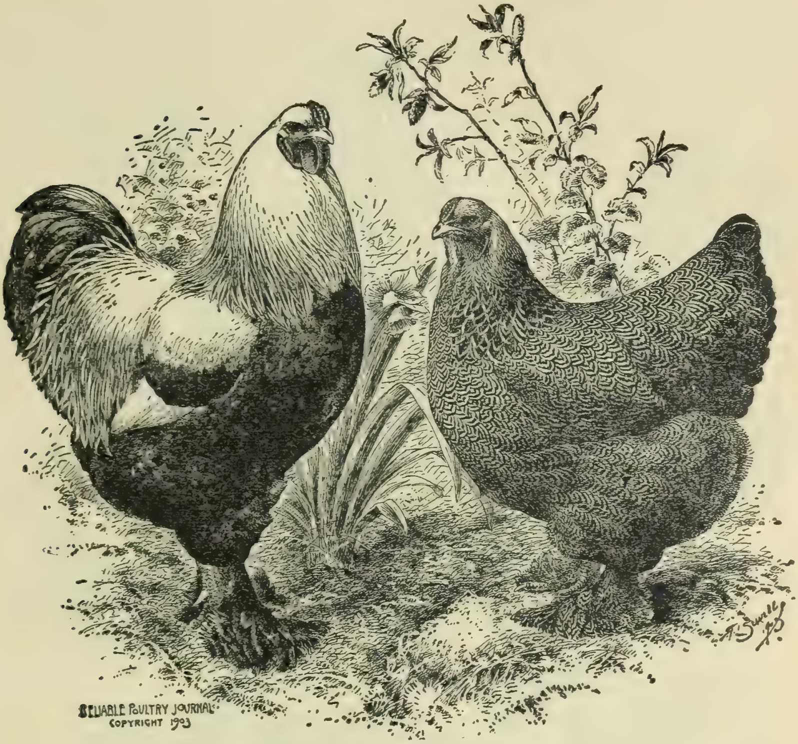
Pair Ancona Fowls.

The English group or class comprise the Dorking, Redcaps, and Orpingtons. These breeds have some eight varieties.

The Dorkings, one of the very oldest breeds we have knowledge of are one of the very best for a farmer's fowl. They are fair layers and excellent table poultry. They are large bodied birds, of low set rectangular type as viewed from the side with very short legs and posses a fifth toe which differs from most other breeds. Their skin and flesh are white, which is a point in their favor as market poultry in our country.

The Redcaps are also an old breed but are very little known on this side of the Atlantic. They have some very good points but do not surpass any of our more popular breeds in any particular.

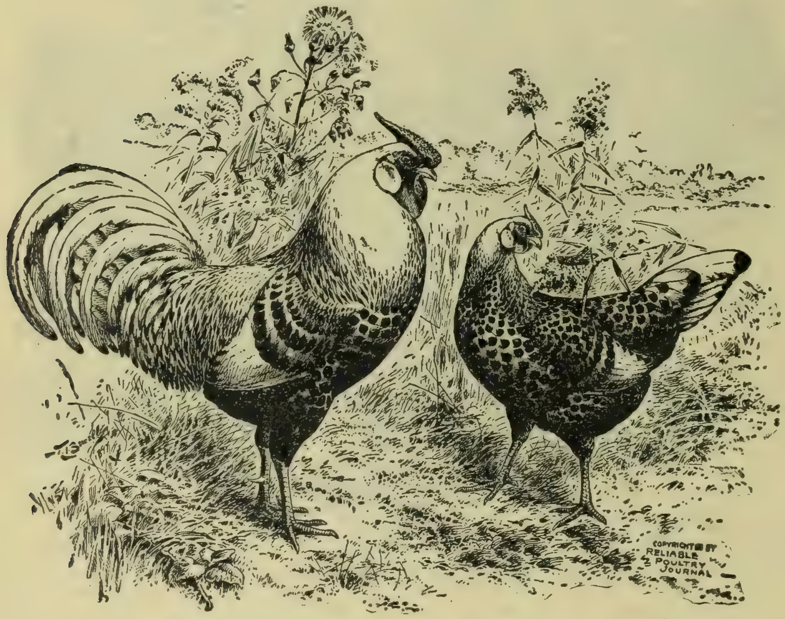
The Orpingtons are a large sized fowl and make very superior market poultry. The pullets weigh 7 pounds while



Pair Dark Brahma Fowls.

the cock birds weigh often as heavy as eleven pounds. Their skin and flesh are white which is an advantage in some markets. The body is oblong in shape being very deep from the back to the keel bone with a breast covered with a good layer of lean meat. The legs are short and well apart. They have not made in this country a very high record in egg production but some breeders report very satisfactory results from them. The varieties are Buff, White, Black and Jubilee, the latter a new variety which has not yet made much head way among the poultry fanciers. There is very little difference in the varieties other than the color, the White and Buff being the most popular varieties. A farmer or poultryman located near a good market for dressed poultry will find in Orpingtons the fowl which will yield the largest and choicest poultry for the select trade.

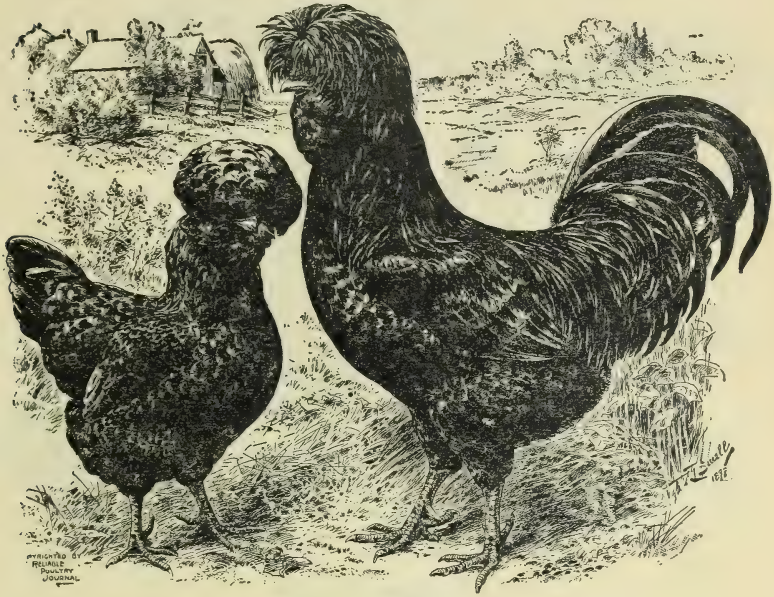
The Polish group of fowls are regarded most as a fanciers fowl than a fowl for utility purposes. They are divided into eight varieties some of which are very odd looking to an inexperienced person. They do not become very popular although they are one of the very oldest groups in this country. The different varieties are:—White Crested Black, Bearded Golden, Bearded Silver, Bearded White, Buff Laced non-Bearded Golden, Non-Bearded Silver and non-Bearded White.



Pair Silver Spangled Hamburg Fowls.

The French group of fowls contain the Houdans, Crevecoeurs, La Fleche and Faverolle breeds.. They have made no great headway in this country but have some very desirable points and for market and egg production would be an improvement over some of the breeds which we have. The Faverolls are a breed which make excellent table poultry being very similar in shape and conformation to the English Dorking fowl. The Houdans are more common in this country but seem to lack vitality. This may be due to climatic conditions or to improper management and care.

The last large group of fowls are the Orientals to which should be included the different breeds and varieties of Game fowls. The farmers of these provinces have never bred many games. The game fowls are usually exhibited by the sporting element in the towns and cities and have not be-



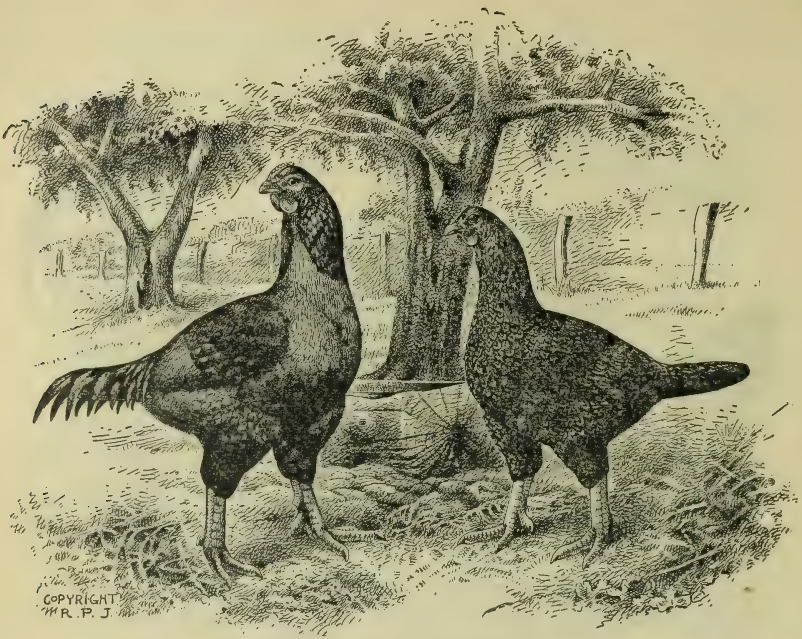
Pair Houdan Fowls.

come very popular. They include about six breeds having twenty-two varieties.

The Cornish Game fowl is the best variety from a utility point of view.

A cross of this breed on Barred Plymouth Rock pullets make a table fowl which when dressed for the table is very hard to surpass in quality and appearance.

In concluding, one must ever keep in mind that the breed is not the all important factor but the individual fowls should be studied and selections of eggs from the most productive, vigorous and healthy of any breed will with good care and proper management insure success.



Cornish Indian Game Fowls.

BREEDING AND SELECTING UTILITY POULTRY.

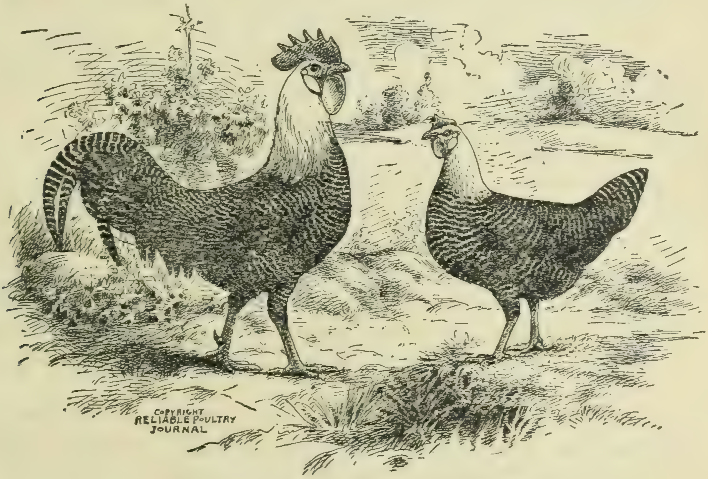
By W. R. Graham, B. S. A., Ontario Agricultural College.

From a national standpoint the value of poultry lies in the amount of meat and eggs that can be produced. In these days of high prices of human foods and increased consumption of eggs per individual we are forced to consider the question of increasing or at least maintaining the individual production of the hen.

It is not the purpose in this paper to consider the question of increased egg or meat production, particularly the former from the stand point, as to how these are seriously effected by the age of the stock, the season of hatching, the methods of feeding or housing; all of which are very important factors and worthy of serious consideration; but to look to the question of breeding and selection as means of help.

Several experimenters have been working for a number of years trap-nesting hens and their daughters with a view of ascertaining the manner in which high egg production was transmitted from generation to generation. Many have tried the easy method of selection, that is to say, trap-nesting the stock for a season and using as breeders only the high producers mated to male or males from high producers. This method, while comparatively easy and simple, has resulted in success in a few instances but for the greater part the results have been disappointing, or in other words the methods of procedure is correct to certain points, but beyond this, it is chance work.

Dr. Pearl of Maine Experimental Station published the results of the work done at the above station a few years ago and in effect stated that high egg production was transmitted from generation to generation through the male, and furthermore that the male inherited this power both from sire and dame. Dr. Pearl worked largely with Barred Plymouth Rocks. It has not been proved that all breeds inherit this character in the same manner but on the other hand it is reasonable to suppose that it is probably true. There are however, a few experimenters who are not ready to accept this as the last word on the subject.



Pair Campine Fowls

The writer has been trap-nesting and breeding for high egg production for nearly ten years and must admit that progress has apparently been made largely through the use of individual males, or in other words, while we are not in a position to fully prove the work of Dr. Pearl, yet, at the same time our results would indicate the same as the surest method tried.

To the average man the labor entailed in pedigree breeding and the keeping of exact records are serious factors, so much so that commercial poultry men are constantly wanting to know if there are not some outward characteristics which will not act as a fairly safe guide in the selection of males.

At present it is not possible to give this information but at the same time there appears to be certain characters which are present in practically all good males that the writer has used. It is not to be considered that the method outlined below is equal to careful pedigree breeding. It is merely suggested as a help for those who cannot do such work.

To date, nearly all our good producing males have been early to mature and have masculine heads and usually feather fairly early. That is to say, they grow quickly, the comb develops early as well as early crowing and early development of the sexual character. Birds of nice, refined appearance, that is those of very neat heads and slow growth, have so far been very disappointing as breeders of heavy egg producers. Where birds are selected as above, one must avoid those that lack size of bone, extremely course in the head, or very small in body. Our experience has been that our best layers in Plymouth Rocks are not standard weight as hens or cocks but that they reach the standard weight or nearly so as cockerels or pullets from a month to six weeks, sometimes even more, before the larger birds, or in other words, they make a very rapid growth and then mature. Practically it means that where an early maturing line is used, birds can be hatched in May and begin laying, easily in November. This is a very essential point to consider from the standpoint of the farmer as he seldom can arrange matters to start selling eggs much before the middle of April, and moreover late April and May chicks on the average can be reared for less cost than those hatched earlier.

Our experience has been that we get just as high egg producers, and as many of them, in the general purpose breeds, as we do in such birds as Leghorns. We have succeeded with each moderately well in that we have had several hens lay above two hundred and fifty eggs from November to November or during one year. We have been surprised? and pleased to find that our heavy laying lines of Plymouth Rocks are our best meat producers or they carry well covered breasts.

In selecting males for breeding purpose be careful to cull all birds with bare or pointed breast bones and particularly careful to avoid birds with a short keel bone. While it is highly desirable to have sufficient space between the end of the keel bone and the pin bones to admit of easy laying, it is also equally desirable to get the keel bone to extend well backward to avoid hens breaking down. This trouble is quite common in many of our heavier breeds, but rarely, if ever, occurs in specimens with keel bone extending well back.

We find that cockerels as described above can be easily grown to be practically mature at six months of age and will weigh from seven to eight pounds. We discard males who do not weigh six pounds at five months and who are not ready to use as breeders.

BREEDS OF TURKEYS..

By J. P. L.

The American continent is the natural home of the turkey At the time of the discovery of American wild turkeys were found in Mexico and Peru. The most authentic accounts place the arrival in Spain, England and France at about 1624. Before the end of that century it was well distributed throughout Europe. Wild turkeys are still to be found in the Southern States, Mexico, and South America.

It is supposed that the English and French carried home specimens of the wild turkey which afterwards were mated with the domestic varieties and produced the Bronze variety. As the domestic specimens kept must have come from England it goes to show that the Wild Turkeys of America were domesticated in England long before they were bred for domestic purposes in this country.

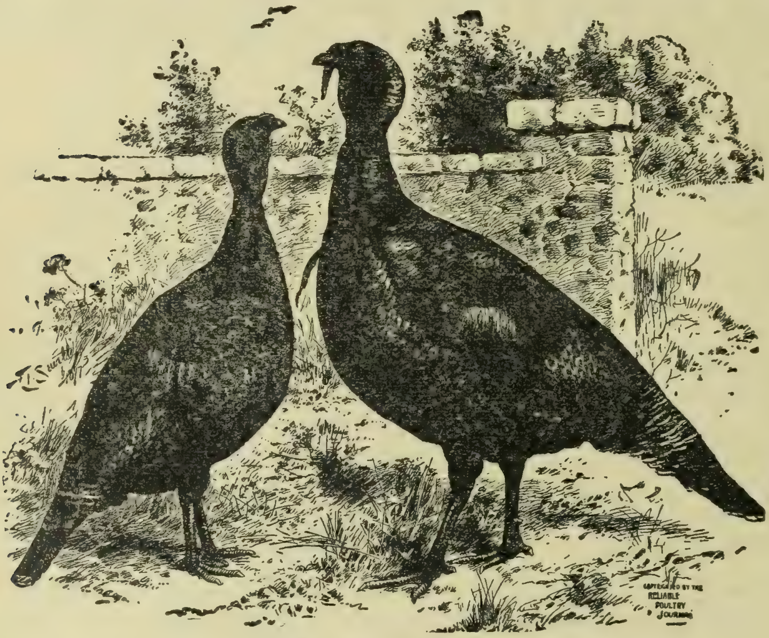
Carelessness in breeding them, which weakened the vitality, and caused the most destructive of all diseases that has ever visited any domestic animals of any kind, blackhead, depleted flocks until but very few specimens were left.

Some years ago attention was given to remedying this disease and by careful selection they have become more hardy and more profitable to raise,.

The varieties recognized by the Standard of Perfection are:—Bronze, Narragansett, White, Black, Buff, Slate and Burbon.

The Bronze is the largest of all turkeys. Their chief characteristics are found in the length, breadth, depth and plumpness of body. The breasts are round and full and developed so as to carry a lot of meat.

The color of the Bronze is a dark foundation finished with bronze and a brilliant lacing of a greenish sheen. This is offset with an edge of white at the end of almost every feather in the plumage. The eyes are dark in color, head of the male very red which changes somewhat at the different stages of its existence; beak, horn color; shanks dark; as they grow older they become shaded with a pinkish cast. The plumage of the female is the same with perhaps a little more white on back plumage. The great beauty of the Bronze is the illumined coppery bronze and glistening black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Pair Bronze Turkeys.

The Standard weight of adult cock is thirty-six pounds and young hen is twenty pounds. They frequently weigh several pounds heavier than Standard Weight.

Narragansett variety is about the same as the Bronze, the only difference being a slight variation in the weight and the width of the bar of white on the end of the feathers. The shanks and toes are also a little lighter in color than those of the Bronze.

The Standard weight of the cock bird is thirty pounds and the young hen twelve pounds.

The White Turkeys sometimes called White Holland were originally called Australian Whites. They originated from sports of some of the other varieties. Their size has improved in late years from breeding to white sports from the Bronze variety. They are the most domestic and easiest to care for, and are less inclined to roam about than any of the other varieties.

The Standard weight of the adult cock is twenty-eight pounds, while the young hen weighs fourteen pounds.

The Black variety may be termed the original turkey of America. They were of a black plumage and were used originally for the cross that produced the Bronze,. They have an even covering of lustrous black feathers throughout the entire plumage, shanks and beak quite dark. The color of the skin is of a yellowish tinge and are one of the most valuable varieties for market purposes.

The Standard weight for adult cock is twenty-seven pounds and for the young hen twelve pounds.

The Buff and Burbon Reds are the same variety differing only in the different shade of color in the feathers and the Burbon Reds being somewhat larger than the Buffs.

The color of the Buff is a pure buff with a lighter shade on the wings. The Burbon Reds are of a deep chestnut color of plumage edged with black and tracings of bronze black throughout.

The Standard weight of the adult cock in the Buff variety is twenty seven pounds and the young hen is twelve pounds. The Borbon Red adult cock is thirty pounds and the young hen is fourteen pounds.

The Slate variety are the result of a cross between the White and Black varieties. They have a bluish slate-colored plumage, occasionally dashed with black spots. They are not generally kept and are considered more for fancy purposes than for utility fowls.

The Standard weight for adult cock is twenty-seven pounds and young hen twelve pounds.

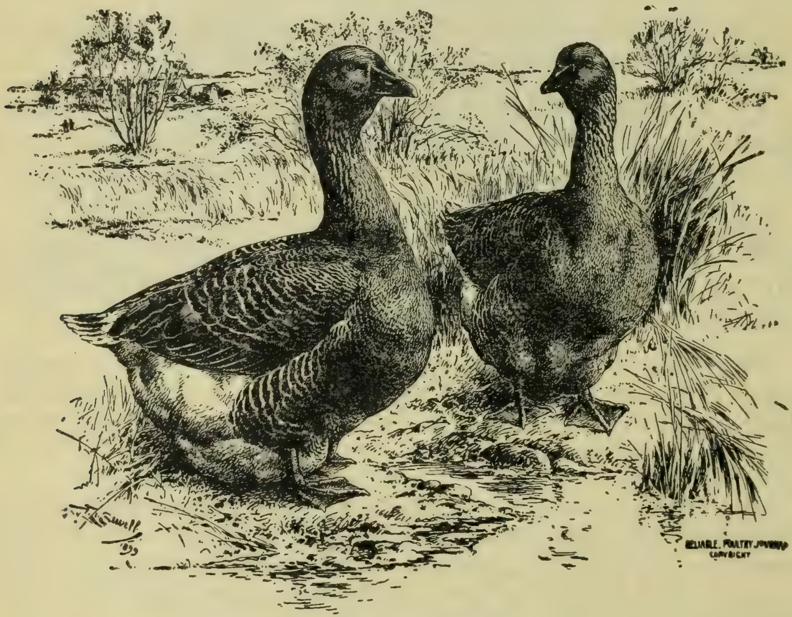
The Wild Turkey is found in the Southern States but they are not found in Canada. They are not large, being about the size of an average mongrel bred turkey. The skin is darker and more of a purple red than in well-bred domestic stock.

BREEDS OF GEESE.

By J. P. L.

The Domestic geese in America are all from stock which were imported from Europe and Asia. While some breeds of geese are quite regularly better layers than others, their laying qualities have not been sufficiently developed in any breed to merit a special classification on this quality. They are kept in domestication usually for their flesh, but occasionally for ornament. The most appropriate classification is to make two divisions, economic and ornamental.

The economic breeds which are common in this country are, Toulouse, Embden, Chinese, African and Canada Wild Goose.



Pair Toulonse Geese.

The Toulouse originated in France and were taken from there to England where they were much improved in size and feather. The stock which is bred in this country came from England where the show specimens are usually past all usefulness, time having given them extremely prominent dewlaps, and almost deformed them by the over fat condition in which they are shown,. The shape is oblong in body; the carriage is erect, the neck is long and slender with the feathers of the neck in ridges. The color of the plumage is grey, shading darker in the neck but grades away lighter from the shoulders to the extreme end of the abdomen. Legs, bill, shanks and toes, of an orange color; eyes dark; under body color, rather light.

The Standard weight for the adult gander is twenty-five pounds and the young goose sixteen.

Embden geese were imported into England from Germany but by the English breeders the improvement and high quality of the present breed was attained. They have been in this country for many years and the stock of geese which we call common are the progeny of these early importations. The shape might best be described as having a canoe formation, the rear portion being shaped like a canoe; the back is rather straight but the carriage is less upright than in the Toulouse.

The Embden should not have the dewlap and any hanging down of the abdomen is considered a deformity. The color is pure white; bill and shanks orange; eyes of bluish cast. This breed is sometimes called Bremen from the fact that the first importations into England were from the port by that name.

The Standard weight for the adult gander is twenty pounds and the young goose sixteen pounds.

The Chinese geese are of two Standard varieties Brown and White. They are the smallest breeds we have of domestic geese and their origin is attributed to China. The early writers are not very definite about the difference in type of the China and African breeds. The difference in the two varieties is only the color of the feathers. The shape of the African and China is very similar the former being much heavier than the latter.

The color is a grayish brown in the Brown variety pure white in the white variety; shanks and toes of a dusky orange in the dark variety, bright orange in the White variety; the bill of the White variety is orange while that of the Brown variety is dark; eyes of the Brown variety are dark, and in the White they are of a bluish cast. There is a dark yellowish-brown stripe down back of neck from head to body in the Brown variety.

The Standard weight of the adult gander is twelve pounds and the young goose is eight pounds. The African geese are very similar to the Brown China with one exception, the weight of the African adult gander is twenty pounds, the young goose is fourteen pounds.

The Canada Wild Goose is bred in captivity in different parts of Canada. A very considerable trade in a Canada Wild and Common Gray Goose cross is carried on by farmers in Prince Edward Island with the dealers and fatteners in the New England States. Carloads are shipped each year and are fattened in the neighborhood of Boston for the holiday market trade. A number of the pure bred wild are used by sportsmen as decoys and some are kept in Parks for ornamentations.

The color of the body is gray, the head and neck black, the cheeks having white marks; some brown appears in the feathers of the wings.

The Standard weight of this breed is twelve pounds for the adult gander and eight pounds for the young goose.

The Ornamental geese are not very numerous. The Sebastopol and Egyptian Geese are the only two varieties in this class; the former are seen rarely the latter usually in collections. They are not prolific breeders and are said to be quarrelsome, and ugly in disposition with any other breeds of domestic geese.

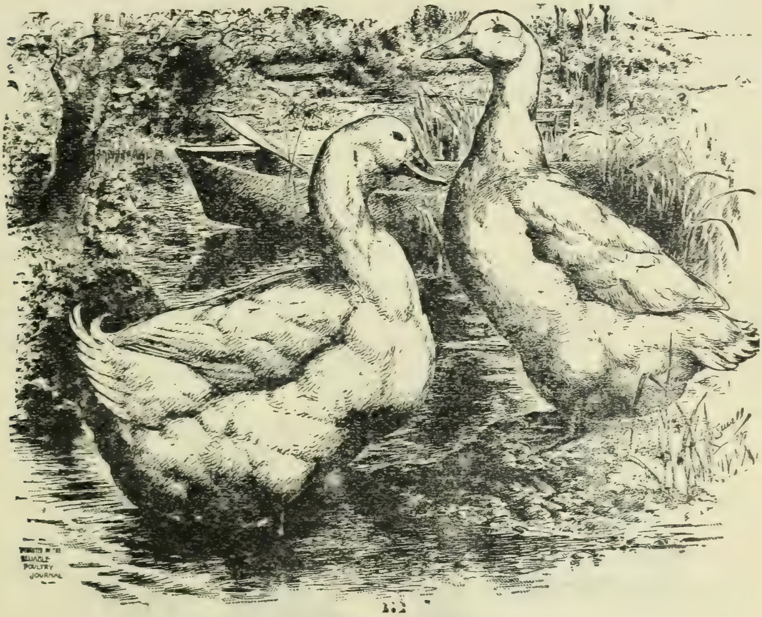
The White Swan is the only other bird of the species which is bred for ornamentation and is rarely seen in these parts of the continent. They are very ugly in disposition and treatment which will give good results with geese is impracticable with these fowls.

The production of geese of good quality is a side line which should be a good paying proposition on nearly every Maritime Province farm. The cost of production is not very high and with a pasture to run over they will find their living after six weeks old. They are not, as commonly considered a dirty animal. If given a run in pasture will require very little grain feed during the summer and the great danger during the winter season is from over feeding, if one feeds any grain at all with the vegetable ration. The prices received for geese during the past number of years have been such that the production of a flock should prove very satisfactory on every farm.

BREEDS OF DUCKS.

By J. P. L.

Nova Scotia does not produce any great number of ducks for market purposes. Some few are produced in the neighborhood of the towns but not sufficient to make any very large quantity on the markets of the Province at any season of the year. There is no good reason why there should not be a good demand for properly fattened ducklings during a great part of the year. The neighborhood of the cities of New England produce a large number of ducks which are marketed at ten to twelve weeks old and it is claimed by persons who have had some experience that the breeders make a profit of fifty cents each on these ducks. Very little attention has been given to the breeding of ducks in the Province and on nearly all the farms where ducks are kept, the common or puddle duck is the breed which is most commonly kept. There is also a fairly large number of ducks which in breeding might be termed mongrel bred. They show no particular breeding but are marked with colors, many and varied, of the different breeds common to the different districts in the Province. They show some of the markings of the improved breeds but have not the size and weight



Pair Pekin Ducks.

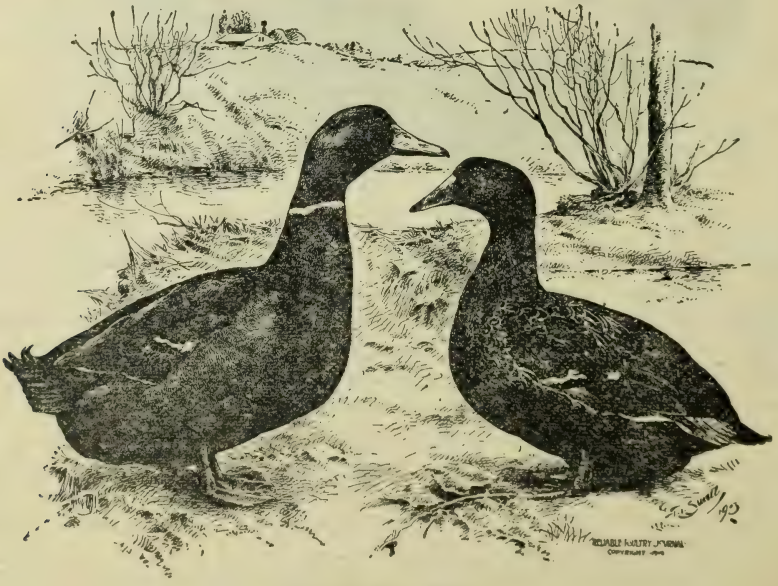
nor are they as vigorous. They are when matured only about one half the size of the Pekin or Rouen and very slow of growth, generally inferior as layers, and of but little commercial value.

The improved varieties of ducks which we have at the present time are of three general types, meat type, the laying type, and the ornamental type.

The meat type are the most numerous, of most importance, and the breeds which have been improved for the purpose of making large weight and size. The breeds of this type are:—Pekin, Rouen, Aylesbury, Cayuga, and Muscovy.

The Pekin duck is said to be the Queen of all ducks. They are more popular than the other breeds and much more numerous. This breed was brought to America from China, where they are raised now and highly esteemed. The first specimens were imported about sixty years ago. In this period a great deal has been done to improve this breed. They are a white in color with a bright orange-yellow bill, shanks, and toes.

The Standard weight of the adult drake is nine pounds while the young duck will weigh seven pounds. They very often exceed these weights. The bodies are long, broad and carried just clear of the ground. The body is elevated a little in front sloping downward towards the rear.



Pair Rouen Ducks.

The Rouen Duck is similar to the Pekin and originated in France. The standard weights are the same as Pekin ducks and their shape is likewise similar. The color markings are very varied and most attractive. The breast being a deep brown color shaded with claret; under part of the body a grayish shade mixed with green; the color of the neck, divided from the body color with a white ring which does not go quite all the way around the neck. The plumage of the female is a light brown, penciled with a greenish black; the legs and feet are orange with a green or brown shade.

The Aylesbury duck is distinctly an English bred duck and has the distinctive feature of a pale, flesh colored bill and very light yellow shanks, with a pure white plumage. The legs and feet are a pale orange. It is believed by many that the vitality and vigor is not very strong in this breed which has come about by indifferent and improper breeding. They are however found to be in good repute among the breeders in England. They have never become very popular in America owing to the manner in which the breeders have developed the Pekin Ducks to fill the requirements of a market duck of quick growth and large frames to carry a fair amount of flesh.

The Cayuga duck is a black breed which is accredited to the State of New York. The adult drake weighs about 8 lbs., and the young duck weighs 6 lbs, to conform to the Standard of Perfection. The experience of the breeders is that they do not, on the average come up to the Standard weights. The black pin feathers and dark skin do not assist to make this breed a favorite on the market. The breed is a favorite with people who like game or wild fowl, as the flavor of the flesh is said to be similar to the wild birds.

The Muscovy is a breed which has been imported from South America. The male is much larger in size than the female, the adult drake weighs 10 pounds and the young duck 6 pounds. The shape is different from other breeds being long and oval in body shape. The color of the plumage is broken black and white with red carnucles over the face. They are not a popular breed and have only a few admirers who prize the birds for the odd plumage and shape.

The laying type of ducks are not so numerous as the other two classes. They have been developed in Belgium and France and are very hardy. The two breeds which we have are the Buff and Indian Runner.

The Buffs are not very common with the breeders in the Maritime Provinces. A very few are bred in several places, but they have not come as yet into favor.

The Indian Runner are an importation from England where they were brought from the Continent The pecular erect carriage is like that of the closely allied domestic Penguin duck. In England the continental stock was crossed with the common English ducks. The color is fawn and white and is always a mark of quality which should be sought after. They are the most prolific egg producers of the duck family. The Standard weight of adult drake is 4½ pounds young duck 4 pounds. The shape is peculiar and very erect carriage, almost upright with long extended necks and bills. The head is marked fawn and white, the neck down below the throat white, breast and body plumage half way back fawn. The balance of the body fawn grey and white, Marked fawn and white in the wings make up the color markings of this very popular egg laying breed. As layers they surpass all other breeds of ducks known on this Continent. Some persons reporting the average yield of eggs from a flock to be two hundred eggs per duck per year. They are not considered as a market duck although they make very fair duck broilers.

The ornamental type of ducks include The Crested White Ducks and the Call Ducks.

They are not a very important class and except for a few kept for exhibition purposes, do not have a claim for much attention from the farmers and poultrymen of the Maritime Provinces. In a few sections sportsmen have kept a small flock of Wild Mallard Ducks for decoys or for their own table use. The number kept is very small.

It is not the intention to try and promote any breed of Ducks, Geese, or Fowls in the articles written in this report but rather to place the particular merits of the several breeds and let each and every person make the selection which they think will best fulfill the purposes for which the breed may be kept.

A general rule to follow is for farmers to select breeds and varieties which will make good market poultry when killed for the table and will also lay fairly prolific, thus enabling a good reproduction of the flock each year.

CAPONIZING.

By J. P. L.

In Nova Scotia Caponizing of young cockerels is not practiced to any extent. The advantage is plain to any one who has ever tried to fatten a pen of young cockerels. In several places it has been attempted on a small scale and has proven very satisfactory. The birds grow to a very much larger size than the matured cockerels and will remain in pens of any number without the fighting and loss which is always a disadvantage. In some markets of the United States Capons bring a higher price than chickens, and are much prized by persons who affirm that the flesh is in every way superior to that of chicken. For a short time after the operation the fowl does not show any rapid growth but as soon as it has recovered from the effects the growth is very marked and the flesh is soft and does not become firm. If the ration has been made up with a liberal supply of skim milk and fine ground oats, with the coarse hulls removed, the flesh is white in color and of a very fine flavor.

Chickens which have been hatched late in the season and are to be held for market in early spring make the best Capons. The Cockerels will make weight and size for fall market but to insure continuous growth during winter the best results will be secured by operating on the cockerels.

Cockerels of the American and Asiastic breeds or crosses of these breeds make the best capons. The operation is not a very difficult one and should be done when the birds are about six weeks old or just before the sexual development has taken place. The operating table should be a small narrow one , high enough so as not to cramp the operator doing the work. If one has not too many to operate on a barrel will answer very well for an operating table. Two ½ bricks attached to short pieces of cord will be required to hold the bird in position on the top of barrel or table.

A set of instruments can be obtained from any of the Poultry Supply firms and cost from $2.50 to $4.00 per set. Each set should contain the following: Caponizing knife, spreader, caponizing hook, probe and spatula, cannula and wire or patent scoop, spoon forceps, tweezers, sponge, cotton wool.

Fowls for the operation should be starved for thirty-six hours to have the intestines empty.

Lay the bird on its side and wrap one cord around the legs and attach the ½ brick to the other end of cord. Attach the other cord to the locked wings and let the weights hang over the side of the table or barrel. This will hold the fowl on the operating table securely. Moisten the feathers with cold water into which a small quantity (about 1%) of carbolic acid has been added. This will help to prevent the bird from bleeding and will also disinfect the cut.

Locate the table where there is a bright light which should shine on the fowl. If the operating has to be done in a poorly lighted room the use of a small hand electric light is a great assistance.

Pluck a few feathers above the first and second ribs near to the back bone. If the feathers are wet it will not be necessary to remove very many feathers.

An incision about one inch long must be made between the first and second ribs. In making this cut, put the point of the knife in quickly near the back bone and hold it there for a moment or until the bird becomes quiet; then increase the cut taking care to cut between the ribs. If any blood shows from the cut, the moist sponge should be used to dry it up. Before cutting the skin should be moved to one side and the cut should not be made in the body opposite the one made in the skin. When the operation is over the skin will cover the hole in the flesh between the ribs and the cut will heal in a few days.

Next insert the spreader by pressing it together and having the hook ends catch between the ribs. Hold the spreader in position with the left hand and with the knife make the opening wider by cutting towards the backbone and from it so as to admit the scoop easily. Do not go very near the backbone. By cutting on a line with the veins and not across them, there will be little or no blood. Should there be much bleeding wipe the cut and opening with a damp cloth or sponge before the inner skin or membrane has been torn open. With the hook tear open the thin skin or membrane until the testicle is in view. The hook must be used with care or you may puncture an artery or bowels. Next take the probe in the right hand and with it push the bowels aside. Insert the scoop twister with the right hand and catch the upper testicle endways in the scoop. Care should be taken to get all of the testicle into the scoop before an effort is made to break the spermatic cord. Next twist the testicle off. Use the probe to assist in gently pushing the testicle in the slot in the scoop.

The beginner will do better to remove each testicle from each side by making two openings. Care should be taken to get every particle of the testicle removed as a very small piece even if only as large as a pin's head will cause what is known as "slips". If the testicle is very large, which is the case in a four months' old Leghorn, take the scoop out full and go after the balance, or better still if possible take the whole of the testicle out without breaking it. If much blood flows spoon it out with scoop twister or tweezers and some moist cotton wool.

Remove the spreader and allow the skin to settle, back covering the opening and wash the wound with a disinfecting solution.

Use a surgeon's small needle to make two stitches with cat gut in the cut on the skin. Place the birds in clean, shady quarters with plenty of fresh water. Feed a soft mash for the first week, and do not allow them to exercise violently for the first few days.

The next day after the operation, look for windy puffs in the skin near the cut and these should be pierced with a needle to allow the gas to escape from under the skin.

If a bird is killed in the operation it is as good for food as if it had been bled or killed by dislocation, When through caponizing cleanse all instruments wipe and place where they will become dry and replace in the case for the next operation.

Mark all birds with leg bands which have been operated upon to keep them from being mixed with the cock birds. It is better to keep the capons in a separate pen.

In dressing capons for market, the feathers are not plucked from the neck, the legs and wings; the body alone is plucked clean of the feathers. Packed in cases of one dozen to a case they bring a higher price. Capons which when matured weigh eleven to twelve pounds would not if unaltered make more than seven or eight pounds. The very superior quality of the flesh is a factor which assists in creating a market for this line of poultry. A little practice makes the operator expert and there is little danger of loss.

TUBERCULOSIS IN POULTRY.

By C. H. Higgins, B. S., D. V. S.
Department of Agriculture, Ottawa.

Tuberculosis or consumption is a disease that affects fowl as well as human beings, cattle, hogs and other animals. It is caused by a bacillus or germ which is only distinguishable from the germ seen in other animals by elaborate laboratory methods. This affection among fowl was first identified in Western Ontario by Prof. F. C. Harrison in 1901, Prof. F. C. Elford in 1903, and by the writer, in fowls received at the laboratory on May 30th, 1904 from British Columbia for an examination to determine the cause of death. Since 1904 the disease has been found by us to be the cause of losses to poultry owners in various parts of British Columbia and also in Quebec, Ontario, Saskatchewan and Alberta. It may be and probably is the cause of losses in other provinces. The disease has also been frequently reported from the Bacteriological Laboratory of the Guelph Agricultural College.

Losses.

The losses from this disease has been large to poultry owners but there is at present no means of arriving, even approximately, at an estimate with any degree of accuracy. Once the disease makes its appearance in a flock the aggregate losses are large although a great number of birds do not usually die at one time.

The following which is an extract from an enquiry made by a large poultry plant when sending an affected bird for examination, is quite the usual experience where tuberculosis makes its appearance in a flock.

"We have lost as many as a hundred fowls with this disease during the past two years. They go light and gradually grow weaker, having a yellow or greenish diarrhoea, some eat to the last, others do not. We have fed mixed grains also mash but they have been eating a large quantity of wheat screenings. We find many of our chicks go the same as the older hens, dying at all ages. We are beginning to think that artificial hatching has something to do with it and we are afraid it is tuberculosis caused by the overheated air of the incubator during the hatching season. We try to keep the conditions favorable around the houses and yards."

In commenting on the above it is only necessary to state that tuberculosis being due to a definite infecting germ, the overheating of the incubator or other conditions surrounding the chicks or fowl will not induce the disease unless the infecting germ is present. The surrounding conditions may render the fowl more susceptible but cannot produce the disease.

Nature of the Disease.

Tuberculosis or consumption in fowls as in other animals is a contagious disease caused by a bacillus or germ. This germ gains entrance to the system, usually with the food, and finding a favorable location grows and extends to the various tissues. This growth of the germ induces symptoms of unthriftiness and this unthriftiness is followed sooner or later by death. The detection of tuberculosis from the symptoms is not always easy. Some may be observed to be "going light" yet they are seen to be good feeders. If picked up it is found that the flesh has almost entirely disappeared from the breast bone and this should make one suspicious that something is wrong. A yellow or greenish diarrhoea is frequently present in affected birds and where this is present the type of the disease is most dangerous to the remainder of the flock as the germs are to be found in the droppings in immense numbers. One of the most frequent symptoms seen early in the course of the disease is lameness, a result of the infection involving a joint of the leg. Lameness is mentioned by persons forwarding fowls for diagnosis more frequently than any other symptom where our subsequent examinations have proven the trouble to be due to tuberculosis. So frequently is lameness the principal symptom observed that I am at once suspicious of tuberculosis whenever it is mentioned.

Course of the Disease.

Fowl affected with tuberculosis may die in a few days from the first appearance of symptoms or they may linger for weeks, gradually becoming more emaciated as the disease progresses, until they die from exhaustion. The progress is largely dependent on the strength of the invading germ and the natural resistance of the bird. Some outbreaks of the disease follow a more rapid course than others, usually however, the course in an individual extends over weeks and sometimes months may intervene before death takes place.

Post Mortem Findings.

The post mortem findings in fowl tuberculosis, when considered in relation to the symptoms and general history, are characteristic. The liver is usually the principal organ affected and there are lesions, from the size of a pin point to that of a large pea, which are white or yellow in color. The larger lesions when cut into give a gritty sensation as the knife passes through them. These lesions are distinct from the liver tissues and may be quite easily separated from the liver itself. In the more acute cases the liver may be greatly enlarged even to twice its normal size. This enlargement in chronic cases is noticeable. The spleen is usually involved, the lesions having the same characters as mentioned for those in the liver. The enlargement of the spleen is usual and it may be four times its normal size. The intestines may or may not be involved. When lesions are present we find nodules from the size of a small pea to that of a medium sized nut. The minute dissection of these usually presents a free opening into the inside of the bowel and at this point of entrance there is an ulceration. It is through this opening from the nodle on the intestine to the interior of the bowel that the bacilli gain access to and are so easily distributed by the droppings.

Other visceral organs are seldom involved. It is frequently observed that the joints, notably that of either or both hips may be the seat of tubercular ulcerations. Such an ulceration is the cause of lameness during life.

Prevention and Treatment.

In the prevention of tuberculosis and other infectious diseases of fowl, sanitary surroundings with plenty of sunlight and fresh air are requisites of prime importance. In our opinion these features are best obtained by the use of the modern cotton front house, a number of types having been described by various poultry authorities. Circular No. 7, prepared by Prof. A. G. Gilbert of the Experimental Farm Staff, describes in detail the method of construction and may be obtained on application.

The best means of preventing and treating tuberculosis in fowls is to destroy the entire flock if all have been running together, and to thoroughly cleans and disinfect the quarters which they have occupied with any good disinfectant, one of which is a five percent solution of crude carbolic acid. This may be made by adding to teacupsful of crude carbolic acid to a pail of hot lime wash. This should be applied with a spray pump, brush or old broom to all parts of the house occupied by the fowl. This method of disinfection is suggested, owing to the fact that in tuberculosis or consumption in fowls, as has already been indicated, the bacilli or germs are found in the droppings in great numbers and these could be destroyed. This action is further recommended as it has been shown that fowls dead of turbeculosis if eaten by hogs communicate the disease to them and it is probable that the droppings would also communicate the disease in a similar manner.

When destroying the birds after it has been demonstrated that tuberculosis is present, some may be suitable for food if an examination of the livers shows no yellow or white spots from the size of a pin point to that of a pea, and there are no nodules or lumps on the intestines. When these lesions are present the flesh cannot be considered suitable for human food.

We have found that eggs from tubercular fowls may contain the bacilli or germs in the white, and others have demonstrated that they are in sufficient numbers to infect small experimental animals. This suggests a possible source through which tuberculosis may be introduced into a flock, namely by the unsuspecting purchase of eggs from someone who has tuberculosis among his fowl.

The drastic measures above recommended should be followed in all cases when tuberculosis appears among fowls. These measures while temporary entailing a considerable loss will in the end prove the most economical to the owner and the community.

Instructions for Sending Material for Examination.

When it is desired to determine the nature of any condition causing losses among fowl, an examination will be undertaken by the Biological Laboratory, Ottawa, providing suitable material is supplied. If possible, two live but effected birds should be forwarded by express in order that a thorough autopsy may be made. It is not necessary to prepay the express. When the condition has been found at autopsy the diseased tissues may be sent by mail, if properly packed and preserved Tissues may be preserved in pure alcohol or a solution of one part of formaldehyde to nine parts of water. After an examination has been made suggestions will be forwarded for the prevention of further losses.

Specimens sent by express or mail should be addressed to the

Biological Laboratory,
Ottawa, Canada.

Information concerning the losses which have been experienced should be sent with the material in order that it may be properly identified. The name and address of the sender should be written plainly so that the result of the examination may be forwarded with the least possible delay.

FATTENING CHICKENS.

By A. W. Foley, Edmonton, Alberta.

A visit to almost any store handling poultry will demonstrate that a large amount of the dressed poultry offered for sale is poorly fleshed and equally poorly dressed. This is not because the demand for poultry is small, but through ignorance of the best method of fattening and dressing birds. The fact is that in but very few cases have the birds received any particular attention in the way of preparing them for market. Of recent years it has been demonstrated that poultry should be specially fattened in much the same way as beef, mutton or pork, in order to produce the best results. It is just as reasonable to confine poultry when being fattened as the larger animals. The simplest method of doing this is by the crate feeding system outlined below, but many a farmer can obtain improved results, if the birds intended for sale were only confined in a suitable shed with clean floor, good ventilation, and such foods as would be fed were the birds being fattened in crates. The crate system is much the better plan, however, and it is advisable to adopt it whenever possible.

The Crate Feeding System.—During the past few years the crate feeding of chickens for market has been introduced from England, and has made substantial progress in Canada, because it has proved to be the most satisfactory means of preparing poultry for market. The work of fattening is readily conducted in the crates. The gain in live weight made by the birds ranges from one to three pounds per chicken during the fattening period.

Crated chickens demand an increased price per pound because they supply a much larger percentage of meat than when lean.

The flesh is also more tender and palatable because it is produced by the wholesome food that is of necessity fed during the fattening period. The confining of the birds in crates also tends to render the muscular tissue less tough, and in properly fattened birds there should be an almost entire absence of such tissue.

Cost of food and gain in weight by crate feeding.—To illustrate the gains which can be obtained by crate feeding, the following figures taken from the results obtained at the Dominion Government Breeding Station, Bowmanville, Ontario, are given.

RECORD OF FATTENING RESULTS.

No. of Chicks	Weight of Chicks	Cost of Chicks	Cost of Meal	Cost of Milk	Total Cost	Total Gain	No. lbs Weight	Dressed at 15c.	Profit over Cost
	lbs.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
36......	111	7.77	1.30	.70	9.77	48	146	21.00	12.13
48......	164	11.48	1.60	.85	13.93	76	194	29.10	15.17
48......	165	11.55	2.10	1.10	14.75	80	194	29.10	14.35
48......	146	10.22	1.96	1.00	13.18	64	174	25.95	12.77
60......	195	13.65	2.10	.87	16.62	105	220	33.00	16.38
60......	185	12.95	1.70	.70	15.35	83	210	31.50	16.15
62......	200	14.00	1.80	.87	16.67	58	205	30.75	14.08
72......	166	11.62	3.75	1.25	16.62	80	231	34.65	18.043
434.....	1332	93.24	16.31	7.34	116.89	594	1573	235.95	119.06

The birds fattened in this lot were of a desirable type and the results, as will be observed, were exceptionally good, showing a profit of over 100 per cent. for three weeks of fattening. Some allowance must be made, however, for killing and dressing, as these are not included in the above statement.

As stated elsewhere in this bulletin, the type of bird that is capable of producing the best results in egg production is also the best type of bird to produce flesh in the fattening crate.

Market Requirements.—Fatted chickens wheather prepared for the Canadian or the British consumer should conform to the following market requirements;

Breast.—The shape of the breast should be long and broad so that when the chicken is dressed the breast will present a plump, meated appearance. The breast meat is the best part of the chicken. Large chickens with prominent breast bones cannot be satisfactorily fattened and they do not produce a good marketable appearance no matter how well fleshed.

Legs.—The legs should be as short as possible, indicating the low, blocky type. The meat on the leg is largely composed of sinews and therefore inferior. Hence the leg should form as small a proportion of the weight as possible. Feathered, scaly, or dark colored shanks are objectionable, as well as any development of spurs.

Flesh.—The color of the flesh should be white and the grain fine, indicating that the bird has been crate fed. Finely ground oats mixed with sour milk, skim-milk or buttermilk, the ration recommended, produces this white fine-grained flesh. Feeding cornmeal instead of oatmeal has a tendency to produce a yellow flesh which is not desirable.

Bone and Offal.—The bone should be small and the bird well fasted, as the minimum of bird and offal are two important factors in the best grade of marketable chickens.

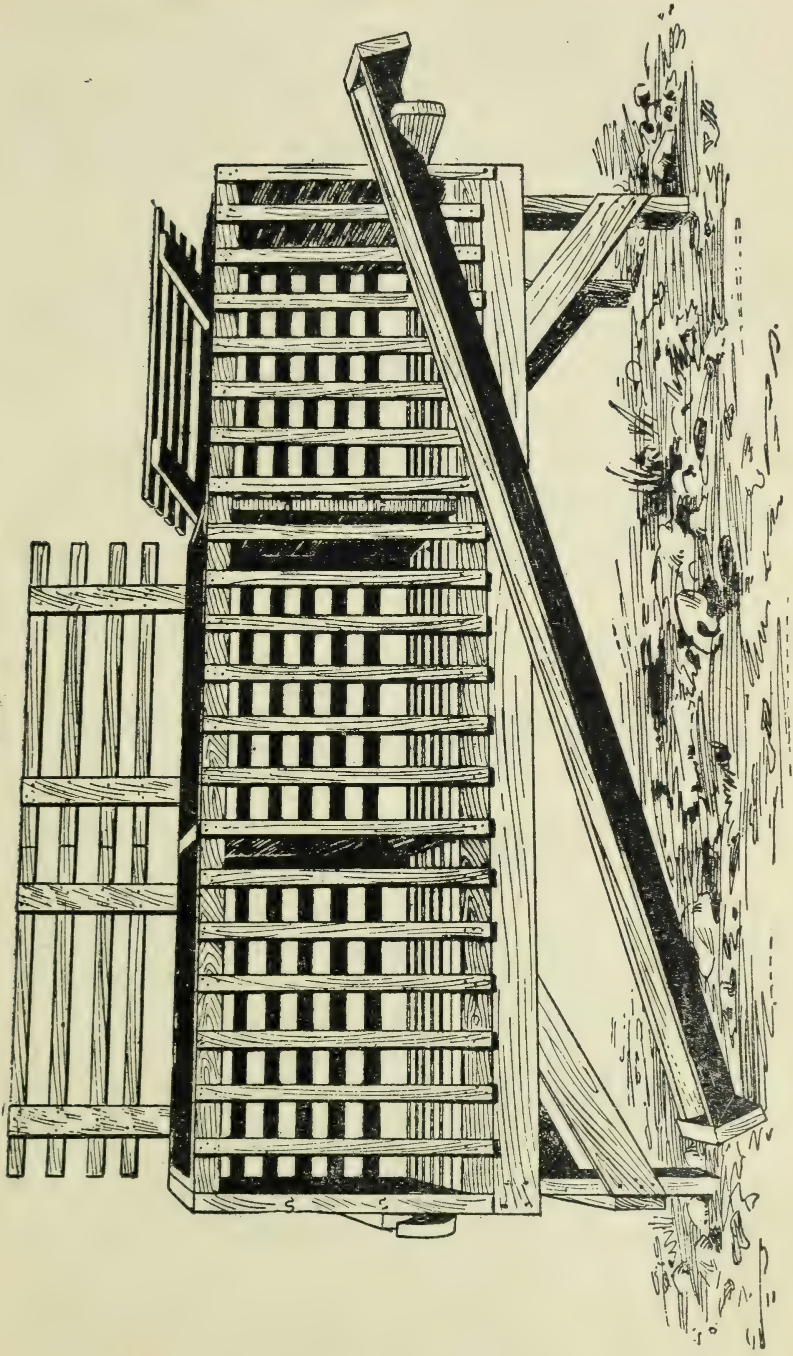
Weight.—The weight of dressed fatted chickens preferred is about four pounds. Plump, crate-fed chickens up to the weight of five pounds are more readily disposed of than larger ones.

The marketing of lean chickens allows but a small profit to the producer and is decidedly unsatisfactory still to the consumer because the offal and waste amounts to forty to sixty per cent. of the live weight, thus making it expensive eating even though purchased at a low price per pound.

In recent years a large demand has sprung up for broilers and roasters, and the poultry farmer who is producing early chickens and catering to this trade, will find it a very profitable one. The weight of broilers runs from one and one-quarter to two and a half pounds each, and that of roasters from three to four pounds each.

In order to have the chickens plump and well fleshed for the market when they are at the most profitable age, they should be placed in the fattening crates when they are between three and four months old. It is not meant by this that chickens cannot be fattened profitably when they are more than four months old. Suitable market chickens will show gains in the crate at any age, but the most profitable gains are made by birds weighing 3½ lbs. to 4 lbs.

Construction of Fattening Crates.—The fattening crates are 6 feet long, 16 inches wide and 20 inches high, inside measurements. Each crate is divided by two tight wooden partitions into three compartments, and each compartment holds four birds. The frame pieces are two inches wide and 7-8 inches thick. This frame, see illustration, is covered with slats placed lengthwise on three sides, bottom, back and top, and perpendicular in front. The slats for the bottom are 7-8 inches wide, but only 3-8 of an inch thick. The spaces between the slats in front are two inches wide, to enable the chicken to feed from the trough. The bottom slats are 1½ inches apart, with the exception of the space at the back of the crate, which is 2 1-4 inches wide. The bottom slats are always placed upon the top of the cross pieces of the frame. This is done to prevent any injury to the chickens' feet should crate be moved and placed on the ground when full of birds. The back slats are placed lengthwise 2 inches apart. Two strips should be nailed under the top slats near the ends of each division and hinged to the framework. When the slats are sawn above the partitions doors are formed for putting in birds.



F. C. Elford's Fattening Crate.

The crates are placed on stands 16 inches from the ground and the droppings from the chickens received on sand or other absorbent material. A light "V" shaped trough 2½ inches inside is placed in front of each crate, and is carried on two brackets nailed to the ends of the crate. The bottom of the trough should be four inches above the bottom of the crate and the upper inside edge 2 inches from the crate.

In fattening for the market it is always advisable to use the fattening crate described in this bulletin. If only a small number of chickens are to be fattened, packing boxes of suitable dimensions can be adapted for the purpose. The open top of the box should become the bottom of the crate, and one side should be removed for the front. Laths should be nailed up and down the front and lengthwise on the bottom to form the floor. The laths should be placed the same distance apart as recommended in the construction of the regular fattening crate. A board should be loosened in the top of the box to remove the birds, and a feed trough arranged in front.

In warm weather the crate should be placed outdoors in a sheltered place.

In unsettled weather it is advisable to construct a rough board shelter above the crate so as to shed the rain; or the fattening should be carried on inside a shed or barn.

During cold weather the crates should be placed in a warm building. Abundant ventilation is required at all times.

Killing Lice.—Before the birds are put into crates they should be well dusted with sulphur, or any good louse killer to kill any lice on them. They should be treated again three days before they are killed.

Feather Plucking.—Birds that are fattening in crates sometimes pluck the feathers from one another. This habit is caused by irritation at the roots of the feathers, and results either from over heated blood or parasites. The remedy is to remove the chickens that do the plucking and feed the others more skim milk, or add animal food and vegetable matter to the fattening ration.

If the trouble is caused by parasites, they will be found in the white powdery matter at the base of the quill. A sulphur and lard ointment should be applied to the affected parts.

Feeding.—It is necessary to feed the birds lightly the first few days they are in crates, not feeding all they will consume. The food should be given twice a day, and after the birds have eaten what they require the balance should be removed and the troughs turned over. Fresh water should be supplied daily, and grit two or three times a week.

Fattening Rations.—A satisfactory fattening ration is one that is palatable and that will produce a white-colored flesh. Oats, finely ground, or with the coarser hulls sifted out, have proved the best grain for fattening and should form the basis of all the grain mixtures. The most suitable meals for fattening are ground oats, buckwheat, barley and low grade flour.

Satisfactory Mixtures of Meal:

(1) Ground oats (course hulls removed).

(2) Siftings from rolled oats (no hulling dust should be included).

(3) Two parts ground oats, two parts ground buckwheat, one part corn.

(4) Equal parts of ground oats, ground barley, and ground buckwheat,

(5) Two parts of ground barley, two parts of low grade flour and one part of wheat bran.

The meal should be mixed to a thin porridge with sour milk, skim milk, or buttermilk. On the average, 10 lbs. of meal require from 12 to 15 pounds of milk.

When sufficient skim milk or buttermilk cannot be obtained for mixing the mashes, a quantity of meat meal, blood meal, or beef scraps and raw vegetables should be added to the fattening ration. A good proportion is one part of the meat meal to fifteen of oatmeal.

The birds should remain in the fattening crates for a period not exceeding 24 days. Some birds will fatten more readily than others and should, therefore, be removed from the crate and killed as soon as they are ready. During the last week, it is well to feed a little beef tallow, shaved into the trough or melted and mixed in the mash. About one pound of tallow to 50 or 60 chickens per day is a fair allowance.

KILLING AND MARKETING.

The methods of killing poultry are many and various. The old one of "chopping the heads off" is perhaps the most ancient and the one in most common use at the present day. Wringing the neck, stretching the neck and piercing the neck are others that are in common vogue, but all these must be set aside and give place to the cleaner, neater and more scientific method of bleeding in the mouth. Decapitation leaves the neck exposed and leads to early decomposition, besides the blood is liable to be spattered on the operator and surroundings. Wringing and stretching the neck allows the blood to accumulate in the neck where it is likely to decompose and cause the flesh to spoil sooner than it otherwise would. Bleeding the bird in the mouth removes all the blood from the body, while at the same time it leaves no unsightly wound and gives no chance for spreading blood upon whatever the bird touches. If the operation is performed properly, all the blood is drained from the body, leaving the flesh of a white color. If this operation is improperly done, the outside of the bird will turn red or show blood spots.

Fasting.—The birds should be fasted for 24 hours before killing. This prevents food remaining in the crop and intestines, which would decompose and spoil the flavour of the meat. Several hours after the last feed allow the birds all the water they can drink. They should have a complete fast until after they are killed.

Bleeding.—Secure a stout cord to the ceiling of the killing room and attach to the end, which should extend down as low as the operator's shoulder, a piece of iron, preferably a large burr. When ready for killing, the birds may be suspended on this cord by simply giving the cord one wrap around the legs, pass it over itself and allow the burr to drop. Hung in this way, it is impossible for the bird to become detached, and it can be more readily bled while suspended.

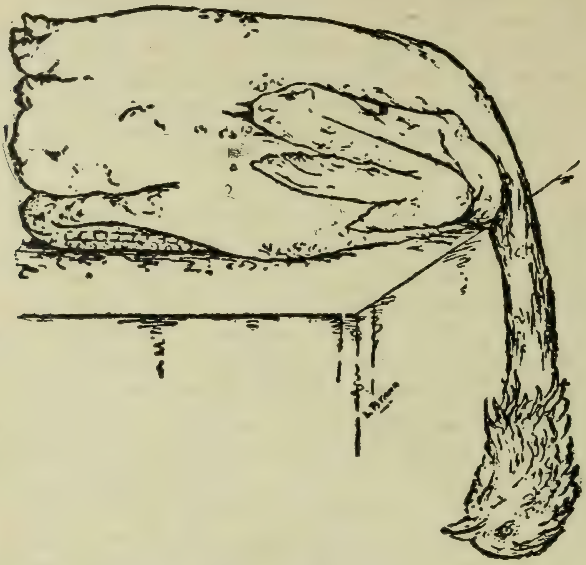
To bleed, place the left arm over the bird, grasp the bird by the neck near the head, with the thumb on the throat By a gentle pressure of the thumb press the mouth open exposing the arteries on each side of the mouth. With the right hand insert the knife so as to sever first one of the arteries than the other. Next pierce the brain by passing the knife through the roof of the mouth towards the top of the head and give it a half turn. Both arteries must be severed in order to insure complete bleeding. and complete bleeding is the only means to prevent the flesh from turning red. The successful piercing of the brain is characterized by a peculiar flutter throughout the body. The plucking is much more easily done if the killing has been properly performed.

To catch the blood and save the annoyance of its being scattered about, attach a small vessel such as a tomato can or small lard pail to the mouth. To do this, stretch a wire tightly across the top of the can and to the middle of it attach a two inch wire hook which is to be hooked into the mouth of the bird, allowing the pail to be thus suspended below the head.

Plucking.—The plucking should commence as soon as the killing operation is completed. With the back of the bird towards the operator hold the wings with one hand and pull the long feathers with the other. Next treat the tail in the same manner. With the thumb and forefinger around each shank remove the feathers from the thighs by bringing the hands towards the body. With both hands roll the feathers from the back, beginning at the tail and following down past the wings and around to the breast, and by turning the bird do the same to the other side. With both hands form a ring of the thumbs and forefingers around the neck at the body and strip the feathers from the neck to within about three inches of the head. By this time the bleeding should be finished. Remove the pail from the mouth, take down the bird and remove the pin feathers with a blunt edged knife and the bird is ready for the shaping frame.

Shaping.—Birds fattened for the market should be properly shaped. This gives them a compact, plump appearance and the returns received are greater than when they are shipped in a rough, unprepared condition. The shaper is made by nailing two 7-8 inch by 6 inch planed boards together at right angles, so as to form a trough. This trough can be made six feet long and nailed into a frame, or 12 feet long with ends on it, and placed on the top of two barrels. The shaper should be inclined slightly backwards.

As soon as the bird is plucked, place its legs alongside the breast. With its breast downward, force it into the angle of the shaper, cover with paper, and place a brick on the back to hold the body down, and one against it to hold it in position.



Properly Shaped Fowl.

Continue the process as the other birds are plucked, placing each in the shaper against the last, and moving the lower brick along to hold the row in position. Care should be exercised to shape and cool the birds in as low a temperature as possible so long as they do not freeze. The time required to cool the birds varies with the season, but from six to twelve hours are usually sufficient.

Packing.—When thoroughly cooled, the birds are placed in shipping cases. These are made of basswood or spruce with the corners lock-jointed and they vary in size to accommodate the different weights of birds. The different sizes of boxes are as follows:

Case No.	Inside measurements in inches	Thickness of wood	
		Sides	Ends
0	19 12-16 x 15 5-16 x 4..........	7-16	9-16
1	21½ x 16 x 4 3-16..............	7-16	9-16
2	23 3-16 x 16 5-8 x 4 5-16........	7-16	9-16
3	24 13-16 x 17 5-16 x 4 5-8......	7-16	9-16
4	26½ x 18 x 5 1-4...............	7-16	9-16

Case No. 0 is for 12	chickens	weighing	(plucked) from	2½ to 3 lbs. each.
" No. 1	"	"	"	3 to 3½ lbs. each.
" No. 2	"	"	"	3½ to 4 lbs. each.
" No. 3	"	"	"	4 to 4¾ lbs. each.
" No. 4	"	"	"	4¾ to 5½ lbs. eac4.

The box should be lined with parchment paper, a sheet of 18 inches by 26 inches being placed on the bottom, another 10 by 26 inches on each side, and a third 10 by 18 inches on each end. Allow about four inches of paper to extend over the edges of the box.

The first row of birds are laid along one side of the bottom with backs down and heads extended across.

The second row are laid with breasts down and heads extended across between the birds on the first row. By placing the birds as described above the case looks the same no matter which side is opened. Place a sheet of parchment paper 17 x 26 inches over the birds, tuck in the edges, fold the extended edges of the paper of the side and nail down the cover.

To prevent the development of mould in warm weather dip the last sheet of parchment paper in a 5 per cent. solution of formalin. On one end of the shipping case should be stencilled the name and address of the shipper, the number of birds and whether they are chickens or fowl. When packed, the box should be weighed and the net weight plainly marked

Marketing Poultry.—The foregoing directions for killing and packing poultry apply generally, but there are epicures who want something special, and often-times it is a paying proposition to cater to their whims. Some call for the birds alive, while others call for them, not only killed and plucked, but drawn.

Shipping Crate.—Where poultry is marketed alive, the standard shipping crate should be used. It is four feet long, 2 ft. wide and 14 inches high, and made of half-inch lumber or lath in the bottom, with the sides, ends and top closed with lath three inches apart. The centre lath on top is made to slide so as to put in the birds. The crate is divided into two compartments in order to prevent crowding. Each compartment is intended to hold from 12 to 15 birds.

Equivalent Market Prices.—In order to give an idea of the relative weights and market values of poultry in a live, dressed or drawn condition the following tables and explanations are taken from the Dominion Poultry Bulletin No. 7. These results are obtained from crate fed chickens in order to secure uniformity of conditions.

The following table shows the loss in weight of fatted chickens.

1. When starved 36 hours and ready to kill;

2. When killed by dislocating or breaking the neck, dry plucked and cooled 20 hours;

3. When drawn and prepared for roasting.

In order to secure an accurate live weight of the chickens before the experiment was commenced, the chickens were weighed two hours after their last feed and this weight is given in the first column.

Loss in Weight of Twelve Fattened Chickens.

No. of Chickens	Live Weight		When starved 36 Hours		When killed, plucked and cooled 20 hrs,		When drawn and prepared for roasting	
	lbs	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.
1.	5	8	4	12	4	7	2	15
2.	4	12	4	—	3	13	2	6
3.	5	7	4	12	4	7	3	—
4.	6	3	5	7	5	2	3	8
5.	4	12	4	—	3	12	2	8
6.	5	8	4	13	4	8	3	2
7.	5	3	4	8	4	3	2	14
8.	5	10	4	14	4	8	2	15
9.	6	3	5	5	5	1	3	7
10.	5	—	4	3	3	13	2	7
11.	6	8	5	14	5	8	3	12
12.	5	14	5	3	4	14	3	6
Totals.	66	8	57	11	54		36	4

Results of the Experiment.—(A) As a result of the 36 hours starving there was an average loss of three-quarters of a pound in the live weight of each chicken.

(B) There was a loss in weight of five ounces due to killing, plucking and cooling of the chicken. This small loss would represent the weight of the feathers.

(C) There is no appreciable loss in weight owing to the 20 hours cooling.

Combined Results of 1 *and* 2.—The total loss in weight of the twelve chickens when they were prepared for market by starving 36 hours, by having their necks broken, dry plucked and not bled or drawn, averaged one pound or 20 per cent. of the live weight. In many Canadian Cities and on smaller markets where the improved quality of the undrawn fatted chickens is recognized, a plucked chicken is more readily bought than one that has been drawn. A chicken that is not drawn until required for the oven, is more juicy in flesh than one that has been drawn as soon as killed and exposed to the atmosphere.

3. In order to complete this experiment and to ascertain the loss in weight when chickens are prepared for the oven the twelve chickens were drawn and their heads, legs and outer joints of the wings were removed. There was an average loss in weight of one pound and one half on each chicken, or 33 1-3 per cent.; 54 per cent. of the live weight of the chicken was the drawn weight.

4. To ascertain the prices per pound at which the chickens could have been sold by drawn weight, plucked weight or live weight, and realize the same amount, the chickens were sold in a regular way on the market. The selling price was $5.95, and the price per pound was 16½c. This price per pound was for *drawn* chickens. If the chickens had been sold for 11c. a pound after killing, plucking and cooling, or by *plucked* weight, they would have realized $5.95 also. Or if the chickens had been sold for 9c. a pound *live* weight, they would have realized $5.95. So that in this experiment a selling price per pound of 9 cts. live weight equalled 11 cts. plucked weight and equalled 16½ cts. drawn weight. These weights are equivalent to the weights of the chickens. A value has not been placed on the time necessary to kill, pluck or draw the chickens.

By estimating equivalent values for the different selling prices the following table has been calculated:

Equal prices in cents per pound for selling fatted chickens by live weight, plucked weight or drawn weight.

Live weight,	6,	7,	8,	9,	10,	11,	12,	13c per lb.
Plucked weight,	11,	12.8,	9.9,	11,	12.4,	13.6,	14.8,	16c per lb.
Drawn weight	11,	12.8,	14.7,	16.5,	18.4,	20,	22,	23.8 per lb.

Forced Feeding.—In England and France a system of fattening poultry by means of a cramming machine has been extensively followed with a great measure of success. It has been introduced into Canada with equally successful results. The birds are cooped in fattening crates and usually fed for two weeks in the same manner as outlined in the section of this bulletin dealing with the crate fattening. They are then fed twice each day with a cramming machine. This machine is simply a hopper with a rubber tube attached to the bottom. The hopper contains the fattening ration in a semi-liquid form and by means of a plunger worked by a foot lever a full feed is forced into the crop of the chicken by one pressure of the foot. This system is only used where it is desired to specially fit birds for certain markets or when it is desired to produce an extra fine quality.

Under conditions such as prevail in this Province, it will be some years before any market will call for a higher quality of dressed poultry than can be produced by the crate fattening system.

A TWO PEN FARM POULTRY HOUSE.

J. P. L.

The house here described is cheap, commodious, comfortable, convenient and easily kept clean. It is built to accomodate about fifty fowls, a very fair average farm flock for the Province of Nova Scotia and can accomodate seventy-five fowls, of the lighter breeds without over-crowding.

We have furnished a large number of blue print plans together with a list of the material required for construction of this house, during the past four years. The houses which were constructed after these plans have given general satisfaction.

The dimensions 12′ x 20′, are such as will ensure economy in the use of material. It is 6′ 6″ high in the front and 4′ 6″ high in the rear. It can be put on a stone, cement or post foundation with either boards, cement or earth floor. The sills are made of 2″ x 5″ spruce lumber and the rafters are of the same dimensions, 13 ft. long. The balance of the frame is constructed of 2′ x 4″ lumber, (see illustration) It is double covered on walls, with boards 10 or 12 inches wide

4'6"

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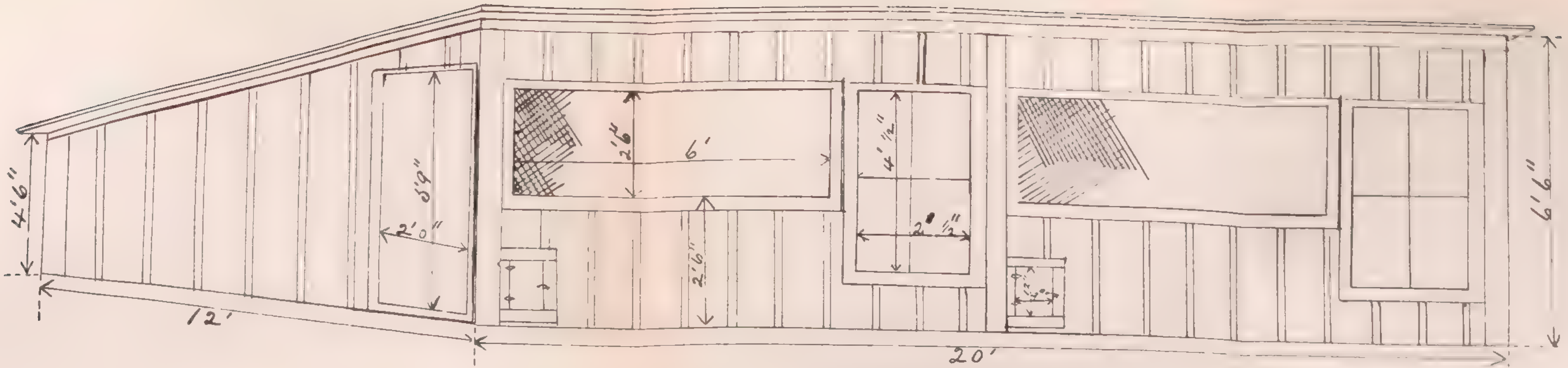
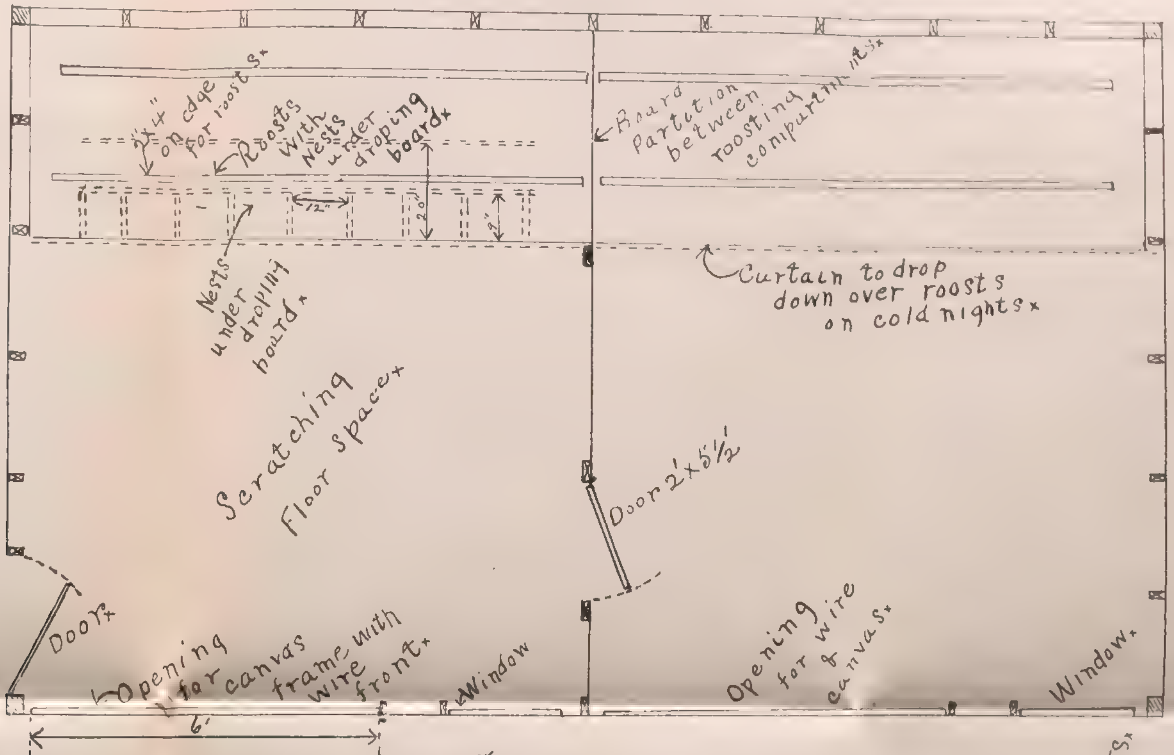
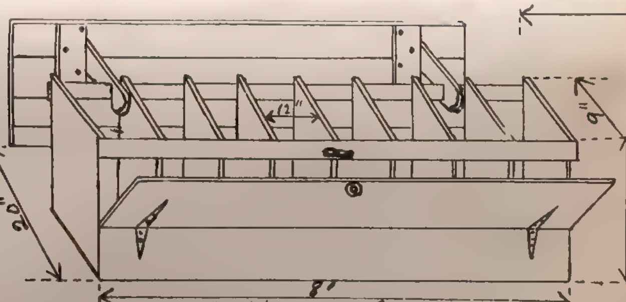


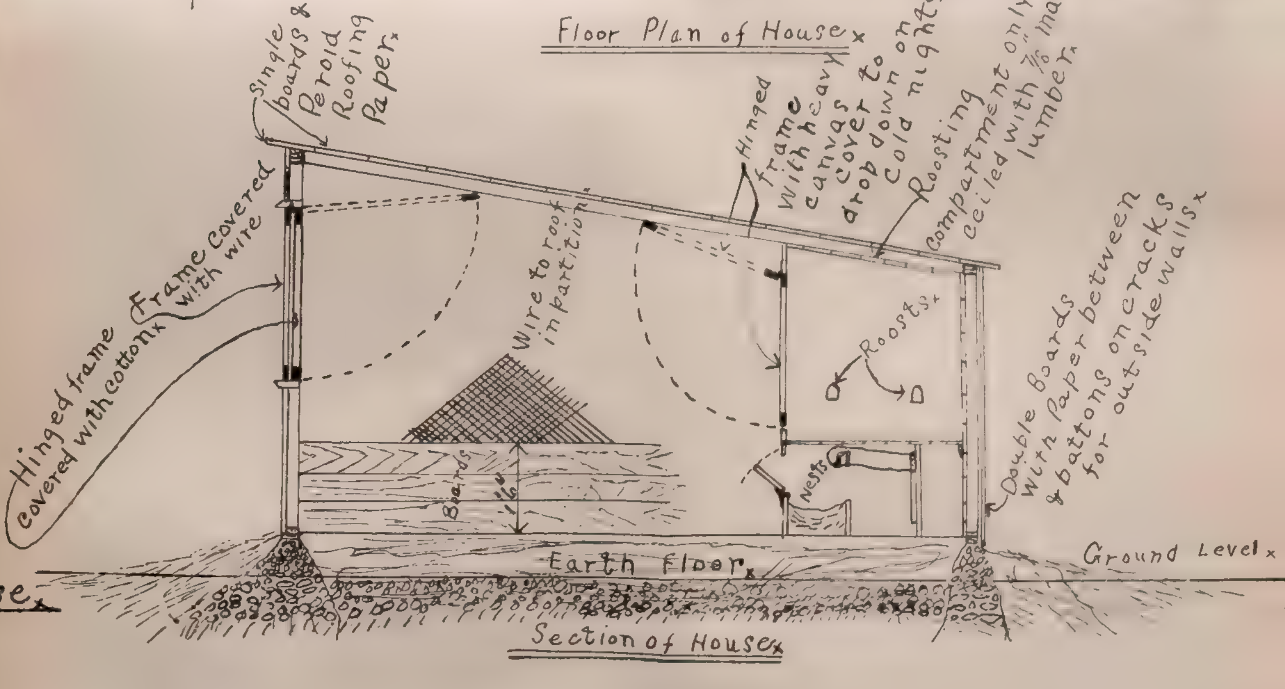
Elevation of House.


2x4" on edge for roosts.
Roosts with Nests under droping board.
Board Partition between roosting compartments.
12"
20"
9"
Nests under dropping board.
Curtain to drop down over roosts on cold nights.
Scratching Floor Space.
Door 2'x5'1/2
Door.
Opening for canvas frame with wire front.
Window
Opening for wire & canvas.
Window.
6'

Floor Plan of House.



Details of Nests.


Single boards & Perold Roofing Paper.
Hinged frame with heavy canvas cover to drop down on cold nights.
Roosting compartment only ceiled with 7/8" matched lumber.
Frame covered with wire
Hinged frame covered with cotton.
Wire to roof in partition.
Roosts.
Boards
1'6"
Nests
Double Boards with paper between & battons on cracks for outside walls.
Earth Floor.
Ground Level.

Section of House.

Plan of A two
Pen Farm Poultry House.
J. P. L.

and paper between the top and inner boards. The cracks on the outside are covered with battens 2 inches wide 7-8 inch thick well nailed on.

The list of material above the foundation is as follows:—

Lumber.— 800 sq. ft. boards 10″ x 12″ wide dressed on one side.
450 lineal ft. 2″ x 4″ lumber for wall frame.
200 sq. ft. matched sheathing for ceiling over roosting compartment.
300 sq. ft. rough boards for roof.
12 pcs. 13 ft. long 2″ x 5″ for rafters.
250 lineal ft. 3″ wide 1″ thick pine lumber for frame.
1 batton door 2 ft. x 5 ft. 9″ x 1 3-4″ thick.
360 lineal ft. of 2″ x 7-8″ battons for outside wall.
2 window frames and sashes for four lights 12″ x 24″ glass.

Hardware.—3 rolls "Peroid" roofing.
8 lights 12″ x 24″ glass.
2 rolls building paper.
4 pr. 4″ butt hinges.
13 ft. 2″ mesh wire netting 3′ wide.
13 ft. 2″ mesh wire netting 4′ wide.
12 yd. muslin or heavy cotton for curtains over roost.
1 Yale lock.
1 package 7-8″ No. 7 screws.
2 lbs. putty and zinc points.
1 package tacks.
7 three inch buttons and screws.
6 three inch hook and eye screws.
25 lbs. 9 penny nails.
10 lbs. 7 penny nails.
3 lbs. wire netting staples.
5 pr. 3″ strap hinges.

The boards are placed on the frame perpendicular on all sides and crosswise of the rafters on the roof.

The ends and rear are boarded up with a space in one end for a door 2′ x 5′ 9″ near the front corner of the house.

The roof is boarded in with boards planed on one side smooth and these are covered with a good brand of three-ply roofing paper. The paper is cemented at the joints and and turned over on the edges and nailed to the lower edge of the cornice. The directions usually come with the package of paper and should be followed to obtain best results. If possible the paper should be laid on the roof during a warm dry day to obtain the best results.

The front has two windows and two openings and in addition two small openings near the floor to permit of the fowls going in and out of the pens. (See plans and illustration.)

The window frames are made large enough for four lights of glass 12″ x 24″. They may be made in two ½ sashes or in one sash which may be hinged to the side or at the top of the frame. Framed wire screens over the windows protect the glass and keep the fowls in the house when the windows are open.

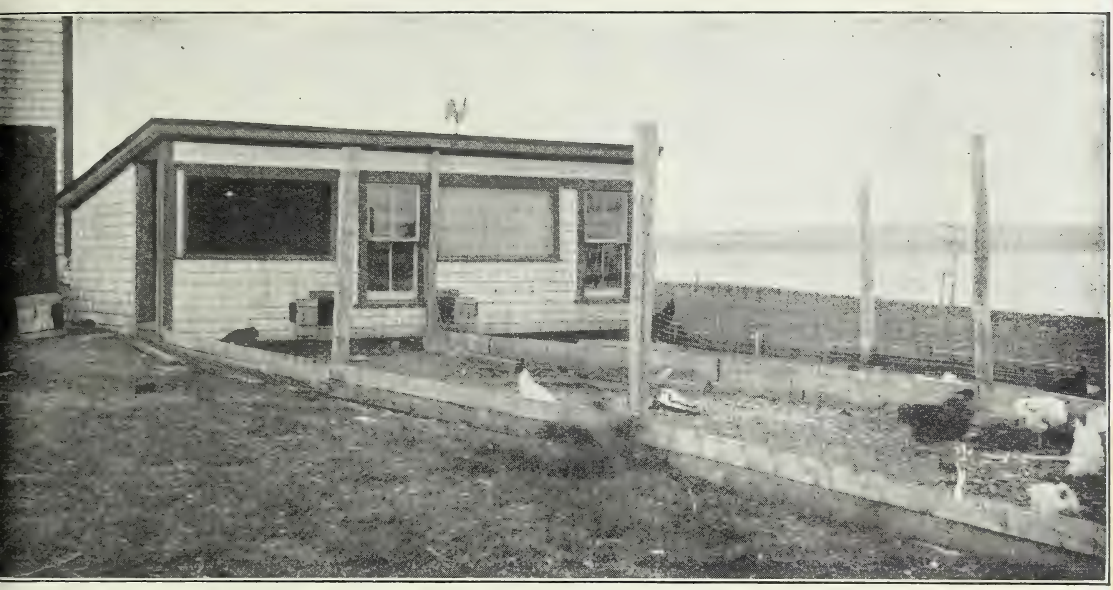
The openings are 2′ 6″ wide by about 6′ long and have inserted into the frame a wire covered frame which is held in position by clets of wood. Hinged to the upper side of the opening is a frame covered with cotton, muslin or duck which can be let down over the opening during severe weather. These curtains should not be placed down on cold days if the weather is not stormy as the curtains are of use only to prevent a storm of sleet or rain blowing on the fowls.

The battons are 2″ x 7-8″ and are nailed over the perpendicular joints of the boards. The nails are put in battons about one foot apart and should be nailed firm to make the board walls tight.

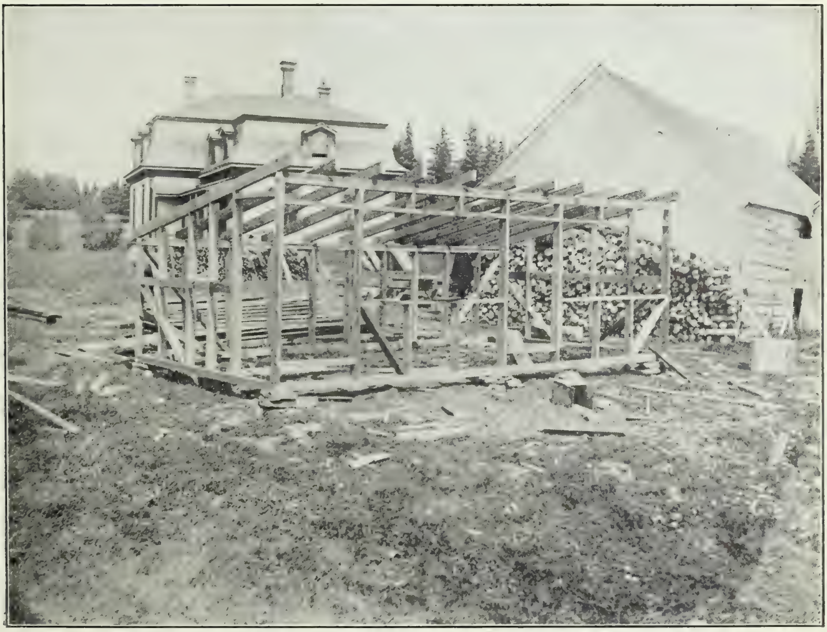
The floor may be cement, boards or earth. In estimating the cost, if boards or cement are used for flooring they should be included in the list of material herewith given. In using an earth floor the foundation should be built so as to insure a dry floor at all seasons of the year and the earth should be replaced several times during the year. Plenty litter should be placed on the floor at all times regardless of the method of construction.

The building is divided into two pens by a centre partition of boards and wire netting as shown in the plan.

The roosts are placed on supports on the walls about twelve inches above the dropping board and are made of 4″ x 5″ lumber on the edge. The ceiling above the roosts and the ends are covered with 7-8 inch matched lumber so as to make a tight compartment for the fowls to roost in during cold nights. This winter protection will prevent the frosting of the combs and toes of the fowls. The fowls kept in this compartment during the past winter did not have an injury to their combs or toes during the entire winter.



Two Pen Farm Poultry House



Frame Construction of Two Pen Farm Poultry House, 20′ x 12′.

The nests are placed under the dropping boards and are supported by strips nailed to the scantling at each end thus giving the fowls the entire floor scratching space of each pen.

The interior should be treated with several coats of whitewash each year and sprayed with a good disinfectant at regular intervals to prevent vermin getting a foothold in the building. The material should be of good quality and finish to make a neat job of the construction of the building.

There is also a great many very good and serviceable plans which space does not permit of even a mention in the pages of this work which any person can obtain by making applications for the publications of the Cyphers Company of Buffalo and the Reliable Publishing Co., of Quincy, Ill., and several other firms who have spent much time and study in solving the housing of poultry problem.

In placing plans of houses in these articles the writer is well aware that many persons will not discard their present poultry houses for an outlay to build new ones. To these persons I would suggest that conditions in the house could be improved greatly by throwing open all doors and windows and making a small opening which should be left open at all times, no matter how cold the weather may be in order that the dampness may not gather on the walls and ceiling of the house.

The house should be located in a sheltered position and should if possible face the south. This is important as it is very desirable to get as much heat from the sun's rays as possible during the cold days of winter. When the house is located in a protected position there is no danger of drafts of cold air on the fowls.

The site should be a dry one and if not on a good porous soil should have a good tile drain to carry off the surface water during spring and fall. There must be no chance for water to get into the house. The soil should have a good thick layer of coarse stones to break the capillary attraction to the surface in the earth floor of the house. Dry loam is placed on top of the coarse material and will remain dry during the entire winter if this provision is made against dampness in the floor of the house. There is no occasion for the use of ventilators of any kind in an open front house as the system of ventilation is provided for in the openings in the front of the house.

THE MAINE COLONY HOUSE.

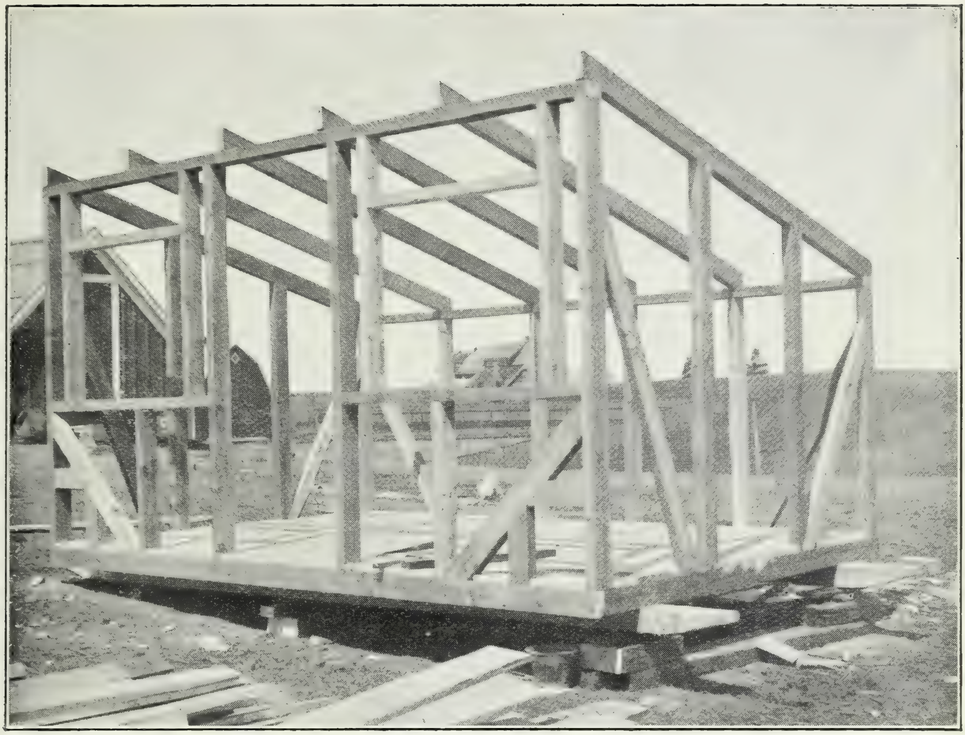
J. P. L.

The Maine Colony House is a closed shed roofed building, covered with boards and building paper and placed on runners so as to be moved from one site to another as the ground becomes filthy. It is also a great convenience if one has a piece of grain stuble to allow a pen of fowls to run on during the two months in the fall of the year. This building is made 8 feet wide by 12 feet long with a door in the centre and a half window on either side.

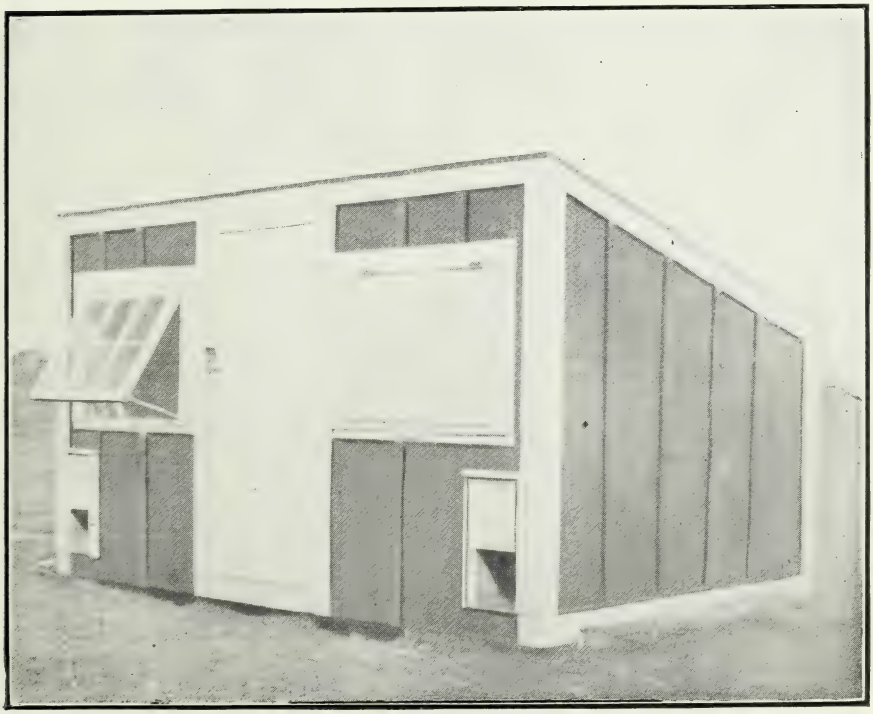
The roosts are arranged in the rear of the building with the nests under the dropping board. The house is very simple of construction and the size may be made larger or smaller if it is desired. The runners are placed beneath the sills so it may be moved from one part of the farm to another by attaching a pair of horses to the building.

Portable hovers may be attached to the interior of the house and they may be used for brooding the chickens as soon as they come from the brooder house. When the chickens are old enough to do without the heat the hovers are removed and the chickens remain in the building until fall when they may be hauled up close to the other farm buildings for convenience in attending during winter weather. There are several advantages in brooding chickens in houses of this type. They are safe from vermin when the doors are shut up at night, have the best of shelter on cold rainy days and they can be moved from place to place as desired. We have placed 100-150 chickens in each of these houses on our plant. It was over-crowding but for best results 75 chickens would be enough for each house.

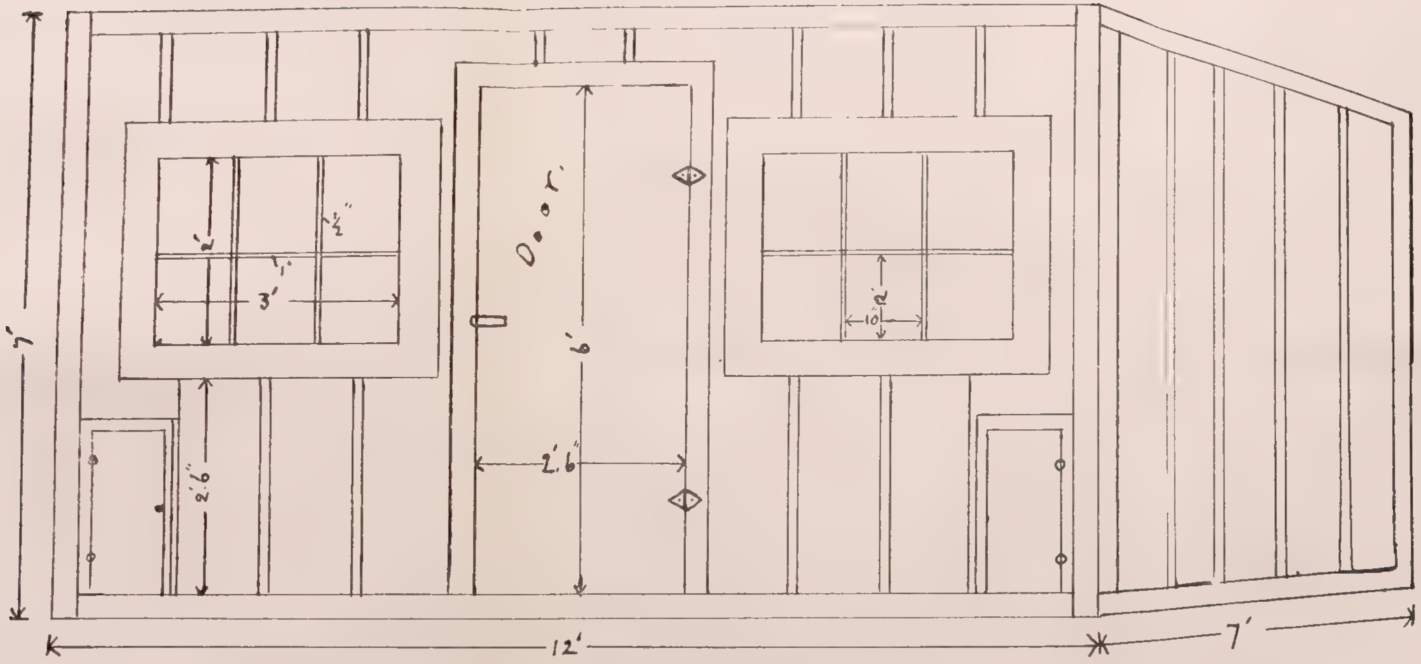
The frame is made of light, well dried lumber. The runners are of hemlock, or maple and the frame is of 2″x 4″ spruce. The whole frame is covered with boards and the roof is covered with one roll of "Peroid" roofing, and the walls outside are covered "Proslate" wall paper. Battons are nailed over the paper to hold it in place. The inside of the building is ceiled with matched lumber on sides, top and back of roosting compartment only. A curtain on a frame is hinged over roosting compartment to let down on cold nights. The ends of the runners are chamfered so as to give them a sled runner turn. A whole is bored in each end of runners to pass a bolt or rod through so as to allow for a chain attached to the end of each runner when being moved. The floor is of two thickness of boards, building paper between, and the cracks are broken to prevent the



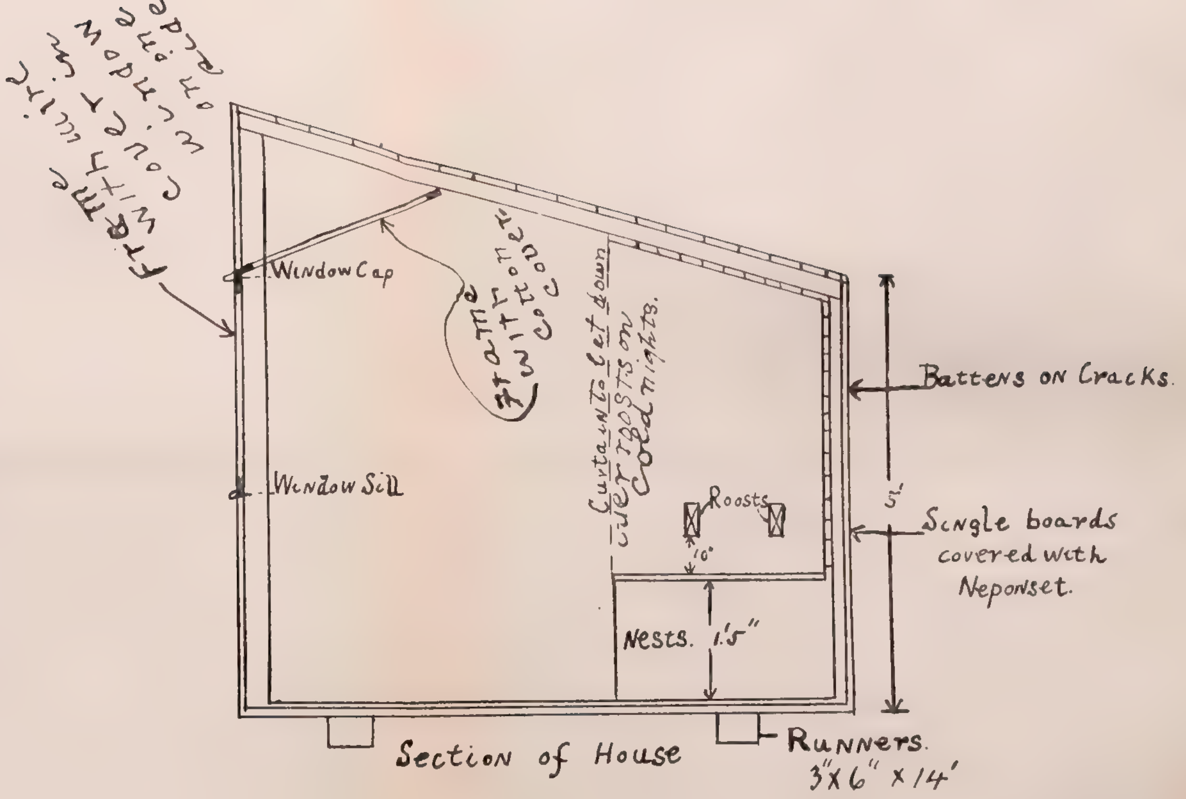
Frame Construction of Colony Poultry House.



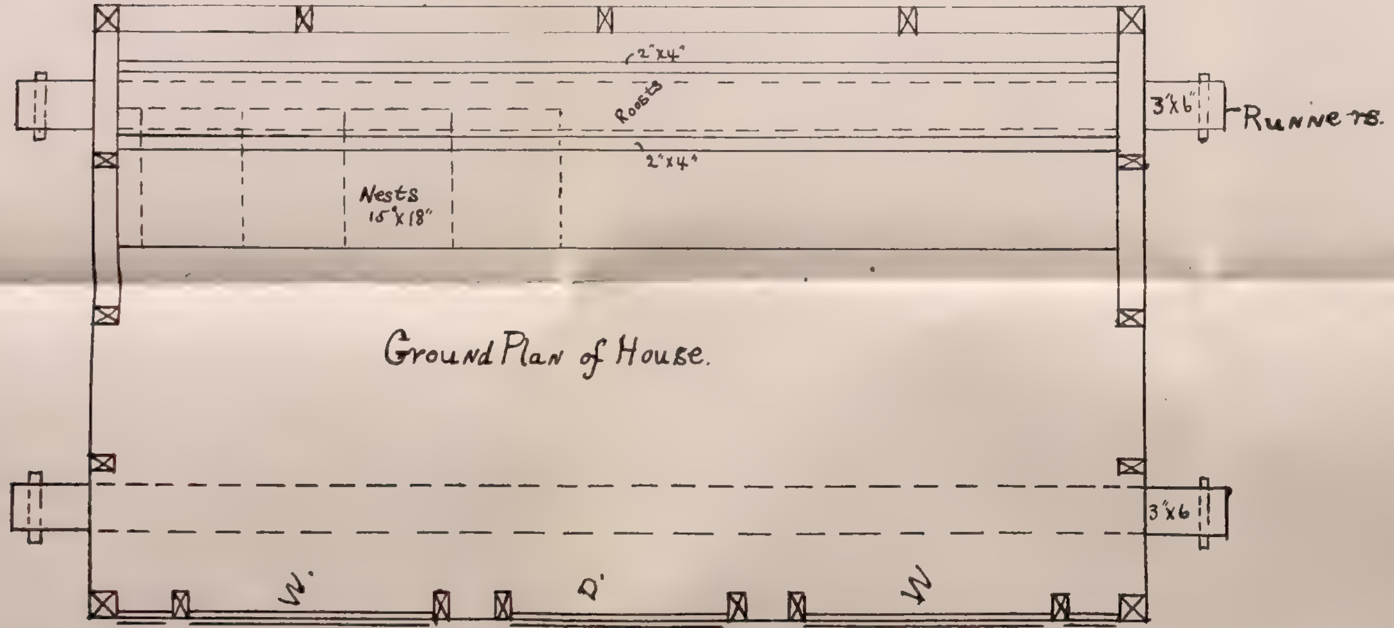
Movable Colony Poultry House 8′ x 12′.



Elevation of House.


Frame with wire cover window on outside
Window Cap
Frame with cotton cover
Curtains to let down over roosts on cold nights.
Battens on Cracks.
Window Sill
Roosts
10"
5'
Single boards covered with Neponset.
Nests. 1'5"
Runners.
3"x6" x 14'

Section of House



Ground Plan of House.

Movable Colony Poultry House.

J. P. L.

racks.

air from coming through. The windows are hinged at the top and during the greater part of the year one window is left out and in its place is a frame covered with canvass or muslin.

The roosts, nests and dropping board are not nailed but placed in position so they may be removed from the building when it is being used for the brooding of a flock of small chickens.

The following is a list of material required for the construction of such a house.

400 ft. B. M. Boards.
220 " " sheathing.
140 lin. ft. 5″ Finish (Pine).
160 " " Battons (2″ x 5-8″).
2 pcs. 14′ long 4″ x 6″ for runners.
6 " 7′ 8″ long 2″ x 4″ for floor.
2 " 12′ " 2″ x 4″ for floor
6 " 4′ 4″ " 2″ x 4″ for rear wall
4 " 5′ " 2″ x 4″ for lower walls.
6 " 6′ 3″ " 2″ x 4″ for front wall
6 " 8′ 6″ " 2″ x 4″ for rafters.
4 " 3′ " 2″ x 4″ for headers for windows.
28 lin. ft. of 2″ x 4″ for braces in building.
2 window frames and sashes for 6 lights 10″ x 14″.
12 lights 10″ x 14″ glass.
20 ft. B. M. matched for door.
5 pair 4½ inch strap hinges.
Putty and points for windows.
Screws for hinges and hooks for doors and windows.
1 roll builders paper.
1 square "Peroid" roofing.
3 squares "Proslate" wall paper.
20 lbs. nails (6D)
4 lbs 5 inch spikes.
5 lbs. lath nails.
1 package carpet tacks.

THE MAINE TRAP NEST.

J. P. L.

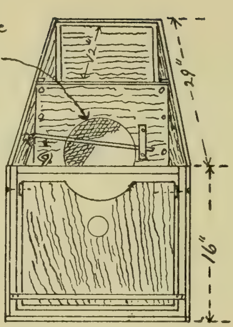
The trap nest which is hereafter described was devised by the Maine Experimental Station and has given entire satisfaction in every respect. It is very simple, inexpensive easy to attend to and certain in its action. It is a box-like structure without front, end or cover, 29 inches long 13 inches wide and 16 inches deep inside measurement. A division board with a circular opening 7½ inches in diameter is placed across the box 12 inches from the rear end and 16 inches from the front end.

The rear section is the nest proper. The door is 10 inches wide by 10 inches high and does not fill the entire opening in the frame, a space of 2 inches being left at each side to avoid friction. It is hinged at the top and opens up into the box. The hinges are made by boring a hole through the frame and into the door and placing pieces of spikes into the holes at the top of the board used for the door. The trap consists of one piece of stiff wire three-sixteenths of an inch in diameter and twenty-two inches long. This piece of wire is shaped so that a section of it eleven inches long rests directly across the circular opening in the division board, and is held in place by two loosely fitting clamps, the slots being long enough to allow the wire to work up and down about three inches. The next section of the wire is eight inches long, and it is bent so that it is at right angles with the eleven-inch section. It passes along the side of the box eleven inches above the floor or bottom of the box, back towards the entrance door and is fastened strongly to the wall by staples, but yet loosely enough so the wire can move easily. The remaining section of the wire which is about three inches long, is bent towards the centre of the box and supports the door when it is open and rests on it. The end is turned over smoothly, forming a notch into which the door may slip when opened.

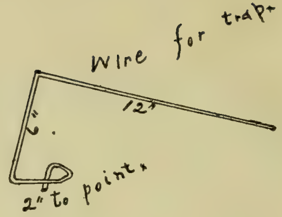
As the hen passes in under the open door and then through the circular opening in the nest she raises herself so that her keel bone may pass over the lower part of the the division board; at the same time her back presses against the wire as she passes it and lifts it so that the end supporting the door slides from under it and the door drops and closes the opening. A small fastening or catch may be placed on the door which will prevent the hen from escaping or others from entering.

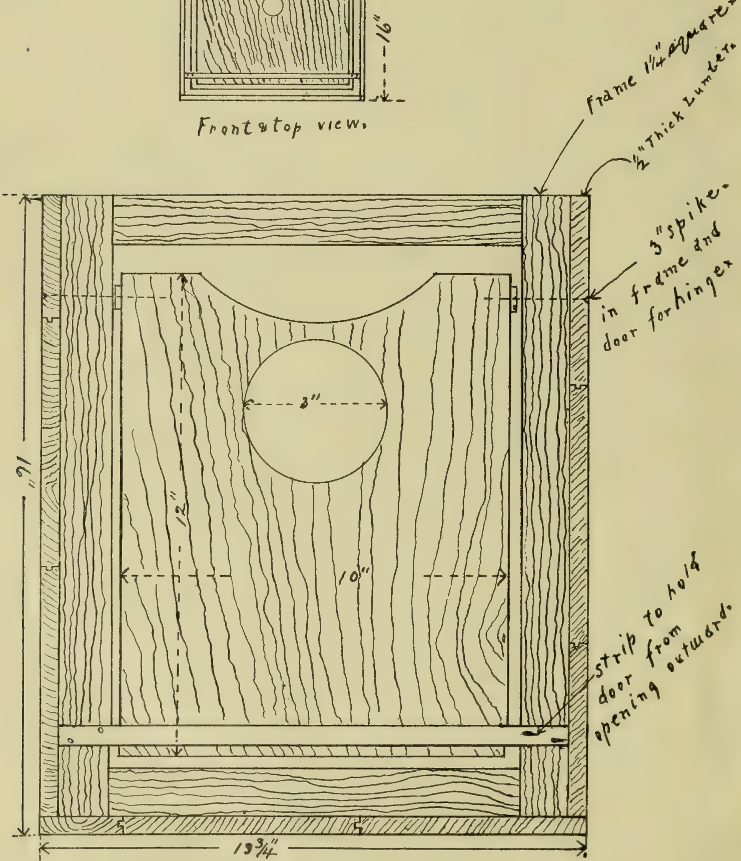
Maine Trap Nest

J. P. L.



Front & top view.





Frame 1¼" square.
½" Thick Lumber.
3" spike in frame and door for hinge.
3"
12"
10"
16"
strip to hold door from opening outward.
13¾"

Front view

The trap nests are placed in a row under the dropping board or in a tier like drawers so that they may slide in and out to enable one to pick the fowls out of the nests and get the number of the leg bands which are attached to each hen. Four nests in a pen of twelve hens are enough if attendant goes through twice or thrice each day. The double box with the nest in the rear is a very decided advantage as when the hen has laid she will come out into the front compartment and remain there until taken out of the nest by the attendant. In trap nests of only one section there is some danger of the hen breaking the egg by stepping on it in trying to get off out of the nest and thus learn egg eating.

To remove a hen the nest is pulled out and as it has no cover, she is readily caught, and the number on her leg band noted and the proper entry made on a sheet of ruled paper in each pen.

The amount of time required to attend the trap nests is very slight when one is about the poultry house and it is very satisfactory to be able to select in the spring of the year the best layers for the breeding pens and to discard all pullets which do not come up to a good production in eggs. The following figures go to show the great difference which was noted in the production from two pens of twelve hens each during the first year in which we used the trap nests.

TRAP NEST RECORDS FOR 1907.

White Wyandots.							*Barred Plymouth Rocks.*						
Hen No.	April	May	June	July	Aug.	Total	Hen No.	April	May	June	July	Aug.	Tot'l
5	20	5	16	2	1	44	9	18	6	2	21	7	54
30	11	15	5	.....	7	38	6	16	11	.....	8	5	40
29	16	18	7	11	6	58	2	16	6	.....	13	19	54
54	18	14	13	12	13	70	26	23	15	5	10	5	58
51	15	17	16	.....	.....	48	58	15	5	12	.....	.....	32
33	16	13	5	15	4	53	57	17	20	16	13	12	78
65	14	11	3	2	.....	30	37	22	18	20	18	18	96
34	9	13	12	11	4	49	55	20	21	19	20	16	96
14	16	19	21	17	18	91	56	18	21	19	9	1	68
17	12	18	22	17	15	84	69	16	20	15	14	11	76
20	20	21	5	.....	.....	46	62	9	11	6	13	.....	56
25	10	21	10	.....	16	57							

In examining the above records it was not difficult for us to decide which fowls should be selected to go to the market and which we would keep in the flock for our breeders. We have continued the use of the Maine Trap Nests every year with satisfactory results from our flock. A few eggs would be found in straw on floor which were averaged up and given credit to the hens in the pen.

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There are also several other types of trap nests which have given fair satisfaction but in our opinion and from experience The Maine Trap Nest is the cheapest and most satisfactory of the trap nests which we have used.

The Connecticut Trap Nest is a simple contrivance which holds a door open by the use of a trigger which allows the hen to release the door when she has passed into the nest box opening. After the hen has passed into the nest the door drops and closes the nest and the trigger holds the door closed in position.

If one is interested in the production of a strain of superior layers the use of the trap nest is to be recommended but it is not to be considered on the average farm where conditions are usually such that time does not permit of the attention being given to the nests which they require. If the fowls are up in the nests for a greater part of the day than is required to secure the records, they will not receive proper exercise and injury to production would follow.

CLEANING AND DISINFECTING POULTRY HOUSES

By Harry R. Lewis, B. S., New Brunswick, New Jersey, U. S. A.

Place all moveable fixtures out of doors in the sunshine, cleanse and thoroughly spray with the following disinfecting solution. Prepare as follows:—

½ gallon crude carbolic acid.

½ gallon of crude sulphuric acid.

Add the sulphuric acid very slowly to the carbolic acid, stirring all the time. The vessel containing the carbolic acid should be placed in a large receptacle containing water, thus keeping the mixture cool, as a large amount of heat will be generated. One part of the mixture to twenty parts of water makes a strong, reliable, inexpensive disinfectant for use in and around the poultry house. The undiluted acid should not be allowed to touch the skin, as it is very caustic in its action.

Sweep walls and ceilings thoroughly removing all dirt and cobwebs. Remove all litter from the house and burn or mix with compost. If the floor is of dirt, remove a few inches of the top soil and in its place put fresh clean sand or gravel.

Next close the house, making it as air-tight as possible, and thoroughly fumigate for several hours by burning flowers of sulphur. The powdered sulphur should be placed in a metallic basin on top of an inverted pail or pan. Alcohol may be used to aid ignition,. Care should be taken to avoid all danger from fire. One pound of sulphur will thoroughly cleanse a house which contains 120 square feet of floor space, allow the sulphur to burn continuously for a number of hours after which air the house for a number of hours by opening all doors and windows. Next spray the house with the disinfecting solution, being careful to touch all inside parts.

Replace all moveable fixtures and give the inside of the house a good coat of white wash, after which wash the windows perfectly clean with soap and hot water outside and in, to admit all the sunlight possible. Fresh clean nesting material and clean litter to the depth of four or five inches must next be placed in the house, and everything arranged in a neat and orderly manner for future use.

(Note.—If the disinfecting is done for the purpose of ridding the house of red mites, the work should be again repeated at the expiration of eight or nine days in order to make sure that all insects have been killed. The eggs in the cracks and crevices are not injured by the disinfecting solution but will hatch out in time to be overcome in the repetition of the disinfecting.

The building should shortly after receive a good coating of whitewash. Make the whitewash by slacking fresh burnt lump lime, then place it over a fire and bring it to a boil. Then stir into each gallon a tablespoonful of powdered alum, a half pint of good flour paste, and a half pound of glue dissolved in water, while it is boiling. Add sufficient water to make the whitewash of the consistency of smooth paint and apply with a brush or spray pump. This wash nearly equals paint, and will not peel off and the expense is trifling.

To a large pail of dry loam, sifted coal ashes, or road dust add ½ pint of carbolic acid and 1½ pints of gasoline or kerosene which should be mixed well until the loam or dust has taken up all the liquid and the mixture has a strong odour of carbolic acid and gasoline. This should be placed under roosts, in nests and about where insects gather and also in the dust bath for the fowls in order that their bodies may be rid of the insects. Sulphur placed in all places where the fowls lay will help to remove the insects from their bodies. This should prove effective in keeping a poultry house clean and free from vermin. If done thoroughly in the fall of the year fowls should not have worry from this cause during the winter and will respond much better to good feed and proper care.—J. P. L.).

DISEASES OF POULTRY.

By J. P. L.

The Diseases of Poultry are not a very long list and poultrymen in Nova Scotia have little to cause worry from this source. The individual fowl is of relatively small value and if one's time is worth anything it is of too much value to spend doctoring individual chickens. The cost of the medicine would be used to better advantage in securing stock which has sufficient constitutional vigor to withstand the ordinary exposure of our climate. There is also the danger of using the cured birds for breeders which if continued in the pens will perpetuate in the offspring the constitutional weakness which brought about the disease in the first instance. A large number of fowls which become ill should be killed and burned or burried thus at the outset preventing any danger of contagion to the healthy individuals in the flock. This is very true and worth much time and worry in the cases of the diseases which affect the fowls such as roup and tuberculosis. It is therefore of much greater importance to the poultrymen to be familiar with the best methods of preventing the more common ailments of fowls than a knowledge of how to doctor sick birds.

The first and most important point in prevention is the selection of strong, vigorous birds which have indications of strength and vigor. The male bird should possess the points of vigor in a marked degree. The head should be large, short of beak, wide between the eyes, with a full crest and carried well upright. The eyes should be bright, large and full, alert and keen to observe all which takes place about the pen or yards. The body should be well filled out and deep from back to keel, long from point of breast to stern. The shanks should be short, stout and toes of good size and straight. All fowls, males or females which have a long narrow beak and a flat crow head should be rejected from the breeding pens as they will prove unprofitable and cause disease and loss in the flock It is a pleasure to find in a flock of fowls a male bird which does not have fear and will defend its kind from dogs and other animals, as one may depend on the vigor of stock from such a parent. Breeders showing any of the deformities common to fowls should be rejected as in many cases these are transmitted from parent to offspring. When these deformities are present it is a very good indication that the stock lack vigor and constitution sufficient to withstand the attacks of disease.

The proper preventive means such as Honsing, Feeding and Disinfecting should receive attention. If one is not getting satisfactory results from good vigorous fowls it is safe to say that a remedy may be found in attention to one or all of these subjects.

Proper housing.—It is not a difficult matter to provide proper houses for poultry. The cost is not great and within the reach of all and one who keeps poultry should provide houses which admit of sunlight, fresh air, and of being easily cleaned. The house should be cleaned at least twice each year by disinfecting, and spraying as stated in "Article on Cleaning and Disinfecting Poultry Houses."

Proper Feeding.—Proper feeding of poultry goes a long way in promoting good health and avoiding the ills which fowls are liable to contract. Good feeding does not permit of the fowls being fed an unnatural ration, irregular or indifferent feeding or the feeding of damaged or unclean grains or vegetables. The proper attention to the drinking water which the fowls receive will in a good many cases be the means of preventing ailments which result from neglect of this important item of their care. The dishes which supply the water should be cleansed and disinfected frequently and a few crystals of potassium permanganate placed in the bottom of the fountain. A great many of the ailments which farmers and poultrymen complain of can be traced to the fowls obtaining their water supply from barn yard pools and unclean drains. A supply of Epsom salts should be kept on hand and used when fowls show any signs of inactivity or indisposition. A good plan is to dissolve about one pound in the drinking water for one hundred hens in one day. Keep other water from them or use the water in which the salts have been dissolved to mix in a mash of ground grains which may be fed to the fowls. In treating fowls which have been indisposed great care should be taken to reduce the quantity of feed and induce exercise by covering all grain in litter so the fowls will have to scratch over the litter to obtain their feed. When only one or two birds show indisposition it is best to remove these to a separate part of the building and treat them as stated.

Care should be taken in admitting new stock to pens of healthy fowls. They should be quarantined on the place until one has made sure that the new birds are free from any disease. It is also a good plan to protect fowls from contact with pigeons and wild birds which very frequently carry disease and vermin from one flock to another,.

The following symptoms and treatment of diseases which it will be satisfactory to treat are here given. It would be impossible to enumerate a great many but those which are given are such as one will likely treat successfully at home.

Break Down Behind.—Symptoms.—The postier part of the fowls body is dragging down near the ground and in bad cases the fowl looses control of its legs and cannot move about.

It is caused by feeding of an overfattening ration which produces internal fat and paralyses the muscles which control the motion of the legs. Treatment: If not too far advanced reduce feed and get fowls to exercise. If due to oviduct disarrangement treatment is useless. The bird is fit for food if killed before the flesh has shown any discoloration.

Broken Bones:—Treatment:—If in the legs of fowls or chickens use small wooden splints and bandage with cheese cloth and twine.

Bumble-foot:—A swelling on sole of foot caused by jumping from high roosts to hard floors. Treatment:—Open abcess by cutting in two directions crosswise thus X and wash out with a good disinfecting solution. Apply carbolic vaseline to the cut and tie up foot with bandage.

Crop-bound:—Symptoms:—Crop packed with long dry grass and feed. The fowl is hungry but has a crop full of feed which is in a state of fermentation. Treatment:—Use a small rubber tube to put milk into crop and work up contents. If this fails cut the skin and crop open and empty out the contents and sew up with cat gut feeding the fowl on soft mashes for some time afterwards. Prevent the fowl from getting at long dry grass for some time and supply green feed in the shape of steamed cut clover hay or cut vegetables.

Egg-bound:—Symptoms:—The hen appears to want to lay and will go on nest but does not lay. If egg becomes broken in body treatment useless. The hen will die.

Treatment:—Give the fowl a ½ teaspoonful of castor oil and if assistance can be rendered help to remove egg from body of fowl by the use of sweet oil.

Feather eating:—Symptoms. The fowl eats feathers found on floor of pen and will pull from one another. This habit is due to an abnormal appetite. Treatment: Give fowls more vegetable and animal food and also provide enlarged quarters in which to house and pen the fowls. It is also a good plan to add a small quantity of sulphur to the ration. It should be taken in hand as soon as noticed in the pens or the habit will spread to all the fowls in the pens and become very difficult to eradicate.

Egg eating:—Symptoms: Fowls break an egg in the nest and start eating it. The taste soon becomes acquired and the birds in the pens will make a run for every and any egg which they may see in the pen or nests. Treatment:—The time to treat this vice is before it has begun and the only proper way is to prevent it occuring by supplying to the fowls during the winter season and at all times an abundance of oyster shells and grit. A good supply of vegetable and meat food will help to correct this habit. The use of false bottom nests will assist to save a few of the eggs but the only proper treatment is to feed the fowls a supply of shell material in the ration.

Gapes:—Symptoms: This is due to a small worm which attaches itself to the wind pipe of the fowl and prevents free breathing. It is found on clay soil which has been used for several seasons for poultry. If the chicken does not dislodge the worms they will cause the death of the bird due to suffocation.

Treatment:—The treatment of the individual birds is very slow and tedious. The use of lime on the land on which chickens have been raised is a preventive measure and will assist in keeping down this pest. If the cases are not too numerous the use of a pointed feather dipped in turpentine and inserted into the wind pipe will dislodge a number of these insects and relieve the chicken. In cases where a number are to be treated the use of fresh slaked lime dusted into a box into which a number of the chickens have been placed will cause them to cough up the worms and thus free the air passage.

Frost Bite:—Symptoms: Due to exposure to cold moist air which has frozen the comb or wattles. If the dampness is not present the danger from frost bite is only slight but with frost and dampness combined fowls will be injured. Treatment: Apply to the comb and toes of fowl a mixture of lard and vaseline in order to keep the parts soft and prevent injury from bleeding. If the bird is very badly frostbitten in the wattles, comb and toes, kill as treatment is useless.

Leg Weakness:—Symptoms: Due to rhumatism from cold and exposure in damp quarters. The fowl does not move about and seems in pain. It is also noticed as a condition which is present in cases of tuberculosis. In young chickens may be due to poor brooding or the feeding of a forcing ration.

Treatment:—Remove fowls to dry quarters and provide plenty of dry straw on floor of pens. Improve the ration so as to build up the condition of the fowls. If due to tuberculosis attention should be paid to the condition of the flock and all fowls which show a lack of vigor should be separated from the healthy ones and disposed of as soon as possible.

Limberneck:—Symptoms: The fowls seem to lose control of the neck and turn the head up over back with eyes staring in a fixed condition. This is caused by eating decayed meat or vegetable matter or from drinking water from unclean pools of seapage. Treatment:— Give the fowl ½ teaspoonful of castor oil twice per day for two days and provide plenty of clean food and water.

Liver disease: Symptoms:—The head and face parts of the fowl become black and the fowls are inactive. This is due to overfeeding and lack of exercise. Treatment: Fowls should be fed very sparingly for a number of days in order to help improve their appetite. Epsom salts should be given in the feed or water. Feed regular and in small quantities until the fowls show improvement in appetite. Provide plenty of green food and a small portion of animal meal in the ration.

Roup: Symptoms:—Colds, Bronchitis, Catarrh, Distemper and Roup may all be classed under the one disease. They are variations of a cold and if neglected for some time result in loss of the birds. It also becomes very contageous when it has been neglected until the nostrils discharge. There is always in roup a very offensive odour, which is not present in ordinary colds, distemper, catarrh and boronchitis. The sticky discharge from the nostrils and eyes will be found smeared under the wings. In very severe cases the eyes will become entirely closed, the head swollen, and the mouth will remain open on account of the collection of cheesy growth which becomes collected in the mouth. In the case of a common cold the fowl will be noticed to shake its head from side to side, as if in the act of shaking something out of the mouth. Treatment: For an ordinary cold give equal parts of cayenne pepper, ginger and mustard in the feed. Sufficient should be given to make the feed hot to the taste but care should be taken that an overdose is not put into the feed. The roosting quarters should also be attended to in order that any drafts on the fowls may be stopped up and care taken to protect the birds from dampness within the house. If the cold has been neglected until there is a discharge from the nostrils treatment is nearly always useless. The birds which recover are not in good condition to be used as breeders. The disease is so very contagious that the sooner one takes drastic measures the less loss and trouble will result. Remove all birds which show any signs of discharge from nostrils and disinfect the quarters thoroughly and treat the sick birds if very valuable, otherwise kill and burn or bury. In the treatment of a very valuable bird proceed with cleaning out all the pus with a wooden scoop or spoon from the mouth and use the syringe to disinfect the nostrils and mouth. Use peroxide of hydrogen for this purpose. Give treatment twice each day and if fowl does not eat of its own accord administer pellets of food about the size of a hazel nut to the bird. Clean up and disinfect all quarters. Burn or bury all litter,, paint or spray roosts and walls of the houses and it may even be necessary to spray the yards attached to the building if the disease has been neglected for some time. Burn all material which has been in use about the sick fowls and take particular care to burn all fowls which have died from the disease.

Tuberculosis: Symptoms:—Caused by a germ. It is a contagious disease. It frequently follows colds, distemper, etc., and the birds become light in weight and very pale in the comb, wattles and face; there is also lameness, general weakness, ruffled feathers and also a diarrhoea. Treatment: It is useless to treat the sick birds but disinfect the quarters thoroughly and feed the fowls on good wholesome food. On farms where the fowls have an unlimited range would advise the use of dry air slacked lime about the yards and buildings.

If the disease continues to spread it will be found more satisfactory than treatment, to dispose of the flock and get a fresh start with healthy stock.

Vent Gleet: Symptoms:—The vent appears red and swollen. The discharge is watery and white which becomes attached to the feathers and dries on them. The fowl will frequently pick the vent causing a very ugly sore which bleeds freely at times. It is caused by indigestion and sometimes may be traced to fowls obtaining water from contaminated sources.

Treatment:—Give liberal doses of castor oil or Epsom salts in the feed or water supply. Wash off the dry hard discharge from the feathers about the vent and apply vaseline to the inflamed sores. Care should be taken that the dry discharge does not get into any cuts on the hands as it will cause inflamation. If the discharge does not dry up from the above treatment, one may conclude that the disease is of the oviduct and the bird will not recover. It does not occur in flocks very frequently and is not a serious complaint.

Bacillary White Diarrhoea of Young Chickens: Symptons:—The chickens will become sleepy and drop their wings, will refuse to eat and some have a very high fever. Their wings appear to grow, while their bodies do not seem to develop. They discharge a white sticky liquid which becomes attached to the feathers at the vent. These symptons make their appearance about from four to ten days after the chickens hatch and in many instances which have been recorded whole hatches of chickens, have died in a few days. It is a disease of young chickens and a great many have tried to explain the cause but have not done much to effect a remedy for the chickens which have the disease. It is a case of prevention being better than any cure. The College Poultry Plant has had a deal of experience with this disease which space will not permit relating in this article and the conclusion which we have come to is that the disease is caused by a combination of circumstances which weaken the vigor of the parent stock and the young chicks readily succumb to the de-vitalizing processes of artificial incubation and brooding. Treatment:—The poultryman should be on the outlook for any signs of this disease in the growing chickens and should keep the suspected ones in separate brooders and pay close attention to the disinfecting of all brooders, coops, feed and water dishes. The small brooders manufactured by the incubator companies are not the most satisfactory for the purpose of raising early chickens with the greatest saving of the inherited vigor and vitality. The food supply should be given attention and the feeding of boiled milk and rice will assist to check the diarrhoea but our experience has not always been that the cures will prove successful. It may be that on some farms the best plan would be to make an entire change of stock and begin again with stock from farms which have not had any signs of this disease. The system of feeding both fowls and chickens should come in for consideration and if at fault a change to better methods should be adopted without delay. It is also better to consult an experienced poultryman before deciding what is the cause and take the advice given in order that no mistake is made in disposing of the flock. Many improper methods of feeding chickens will produce symptoms which very closely resemble those of Bacillary White Diarrhoea of young chickens and should not be confounded with the ordinary diarrhoea which results from over feeding and various other causes. The ordinary diarrhoea in fowls can be corrected by removing the cause and feeding boiled milk or rice and giving attention to the drinking water which the fowls receive. Many persons in reporting cases of diarrhoea in fowls state that the fowls have cholera, This is a mistake as in the Maritime Provinces there has never been an outbreak of fowl cholera. Several times persons have reported fowl cholera which when investigated proved to be diarrhoea or dysentery.

Blackhead: Symptoms:—This disease is one that has caused great havoc among turkeys and in some places has made inroads into flocks so as to make the production of this valuable fowl unprofitable. The head becomes black and the eyes swollen and closed, the wings droop and the fowl may linger for some time or die in a few days. Treatment:—Treatment is almost useless but some breeders report good results from the feeding of a liberal supply of onion tops or garlic in addition to the grain ration. It is also a good plan to disinfect the quarters in which the birds are kept and prevent the healthy ones from coming in contact with those which show signs of the disease.

PARASITES

The list of diseases is not complete without a short reference to the Parasites which annoy fowls. There are not a great many to be considered, and it is also an easy matter to keep them in check. By disinfecting the houses as outlined, in Article on Disinfecting Poultry Houses one need have very little worry from this source of annoyance and loss.

Body Lice:—There are several varieties of body lice which live on the bodies of fowls. Some live on the waste of the body, others live on the blood which they suck from the fowls and thus reduce vitality, lessen egg production and destroy the plumage. They nearly all breathe through tubes in the sides of their bodies and are quickly killed by the use of some good powder which will cause the closing up of the air tubes. They develop from eggs and any dusting of insecticides on the fowls should be repeated in about eight to ten days time to get the best results. The fowls may be clean of insects at one time and by means of the introduction of a new bird into the flock, the broody hen, allowing the fowls to roam with other flocks, by sparrows, and by the insects from other animals getting on the bodies of the fowls and cause loss and worry before one is aware of their presence. Treatment:— The use of any good insecticide dusted into the feathers of the fowl's body, will prove effective. The objection to this method is the labor required to treat any number of fowls. If a dust bath which the fowls will wallow into is provided, in the sunlight, they will dust themselves in such a manner as to cause the death of nearly all body lice. It has also been found that the use of sulphur in the feed has the effect of killing the lice on the body of fowls. One part of carbolic acid and 3 parts of gasoline or kerosene placed in dry soil or loam and placed where the fowls will get at it will prove a cheap and effective dust bath.

Red Mites.—The red mites are to be found in the houses, under the roosts, in cracks and crevices, and during the nights when fowls are on the roosts cause great annoyance by irritation. They are seldom found on the bodies of fowls during the day and it is stated by some persons that they do not draw blood from the fowls. This does not seem to be borne out by the appearance of the insects after a night in the poultry house as they are then full of blood. They are in the cracks and crevices in day time but at night one will be able to locate great numbers of them on the walls. Treatment:—Use a good spray and also repeat the operation in about eight or ten days time. There are a good number of sprays for this purpose on the market. Equal parts of carbolic acid and sulphuric acid mixed and diluted with twenty parts of water to one of the mixture, makes a cheap and effective spray for this purpose. The spray should be used in such a manner as to soak all parts of the building where the insects may find a hiding place. These mites will often appear in a very short space of time in great numbers and the nests and roosts should be sprayed frequently during the warm weather. An old paint can and brush with kerosene oil sprayed well over the roosts just before dark will be a great help to prevent the annoyance from the pest.

The Scab and Scaly Leg Insect.—The Scab mite is the cause of the fowls pulling out their feathers. They are a very small insect and work at the base of the feather, causing itchiness which is relieved when the feather has been pulled out. The insect will be found at the base of the quill in large numbers and they sap the life from the feathers. Treatment:—Wash the inflamed portions of the body of the fowl and use an ointment made up of equal parts by measure of lime, sulphur and lard, rubbed well into the skin and under the feathers. Repeat the treatment three or four times allowing one or two days to elapse between each application. The scaly leg mite is similar to the scab mite and locates under the scales of the shanks of fowls causing a white scale or scab which spreads to the feet and causes sores which annoy the fowls. It is also a very disfiguring sight and should not be allowed on a bird which is shown at an exhibition. The treatment is similar to that for the scab mite. Kerosene oil should not be used for this purpose, it is too severe in its action and will take the flesh off the shanks of the fowls. The yards and pens should receive a good disinfecting and cleaning up where these mites make their appearance as their breeding places are usually in and under droppings and damp corners of the pens. A half bushel of fresh slaked lime to which is added ten pounds of sulphur is a good dust to be used about the dropping boards and in dark corners of the house to prevent the breeding of these pests.

Intestinal Worms: Symptoms:—The intestines of fowls sometimes become infested with worms which make the birds dull, they lose strength and become thin and do not take exercise. The plumage becomes rough and the head dark in color, the eyes dull and any amount of proper feeding will make for little improvement. Close examination of the excrement will show short pieces of the worms and it will be best to remove all droppings from the boards each day.

Treatment:—The use of Epsom salts in the feed or water and the disinfection of the buildings and yards should be attended to without delay. The mixing of a small quantity of dry hard wood ashes, about one half pound to ten pounds of meal will have the effect of loosening the worms from their hold and they will pass off from the intestines onto the dropping boards. If it is found necessary to treat the birds individually a teaspoonful of oil of turpentine with an equal amount of olive oil or castor oil will be found to give good results.

INCUBATION AND BROODING CHICKENS.

J. P. L.

There are two methods of hatching and brooding chickens; the natural in which the hen is used to incubate the eggs and brood the chickens; the artificial in which the incubator is used to incubate and a brooder is used to rear the little chickens to an age when they may grow without the aid of any heat. The advantages of either system are several and worthy of consideration to one who expects to raise a number of strong healthy chickens, In order to make a success of both systems the all important factor to be considered is the production of eggs which will possess a fertile germ, and proper nourishment to develop a chicken at the end of the period of incubation. The eggs should be gathered daily and kept in a dry place and from danger of becoming chilled. All eggs which are imperfect should be rejected. If one has a pen of hens of good laying qualities their eggs should be marked in order that the chickens hatched from such eggs may be marked and the best pullets selected for the layers in the fall of the year. The person who has a small flock and by close observation has found out the best winter layers in the flock will gain an advantage by selecting the setting of eggs from the best layer or layers in the flock. The production of good layers is not hap-hazard but the result of the careful selection of the eggs of the best layers each year together with the proper care and management. The mating of the male, robust and vigorous, with twelve hens which have shown no ailments and are representative of the particular breed should produce eggs which show a high percentage of fertility. The eggs are more apt to be fertile during the spring and early summer than at any other time. Male birds are not very vigorous after the second year and if used the third year should be mated to but one half the number of hens which were used the second year. The pullets do not produce as vigorous chickens as year old hens. The year old cock bird should be mated to pullets and the cockerel to one or two year old hens.. It is a safe rule to set eggs as soon as possible after they are laid but they may be used for hatching when four weeks old and give good results. The sooner set after they are laid the better the results. The manner in which the eggs were kept has a great deal to do with the results, if the eggs are set when older than ten days. It is frequently stated that the sex of the chicken can be determined by the size and shape of the egg. This is an old theory and is not to be relied upon. The size and shape of the egg or air cell has no control of the sex nor can one tell whether an egg is fertile or not until after a period of incubation.

The time required to incubate the eggs of fowls is 21 days; phesants 22-24 days; turkeys and guineas, 28 days; ducks 28-30 days; geese, 30-32 days; swans, 35 days;—these figures are an average and it is found that at certain times they may vary somewhat. The best specimens will hatch off promptly on time, in some breeds a day or so early has been noted to be a general occurance.

Natural Incubation:—The temperature required to hatch eggs of fowls is 103° F for 21 days. The temperature under a setting hen varies a few degrees from this temperature at different times. A hen that fails to keep the even temperature will not bring out a satisfactory hatch. The development of the embryo takes place as soon as the heat is applied to the egg. In infertile eggs no development takes place and incubation has very little effect on the contents of such eggs. They may become stale due to the heat. The eggs which become rotten is the fertile egg which has developed and from weakness of the germ or other cause has died. These rotten eggs will show the germ cell and the broken veins through the shell when held up to a strong light after being incubated for five days. The strong germed fertile eggs will also show the germ and the connected blood veins in the shape of a spider with the germ in the centre at the upper or large end of the egg near the air-cell.

The infertile egg will show perfectly clear like a fresh egg when held to the light. These latter and the rotten eggs should be removed from the nest or incubator on the seventh day. The test may be made earlier but it is advisable to do the testing when the germ has developed and besides it is also convenient to wait until the end of the first week. Small testers for this purpose to fit on an ordinary house lamp can be obtained from any poultry supply firm costing about twenty-five cents each.

A second test should be made on the fourteenth day and all eggs which have not shown development from the seventh day or have dead germs should be removed from nest or incubator.

The air cell in the large end of the egg varies and should be taken as a safe indication of the amount of moisture present in the air in which the hen is setting or where the incubator is being operated. The size of the air cell increases as incubation progresses due to evaporation. If there is not sufficient evaporation going on in the nest or incubator the air cell will be small and the developing chicken will be too large; if evaporation is too rapid the air cell will be large and the chick will be too small and when hatched will be small and puny. The guide one should follow is to so regulate the evaporation during incubation that the air cell may gradually increase so that on the 19th day it does not occupy any more room than one fifth of the interior space of the egg. The air space should not be relied on entirely as some eggs which have thin shells are much more liable to evaporation than others and one would then have to be guided by an average of the setting or the lot placed in the machine. Proper nests should be provided for the sitting hens in a part of the poultry house separate from the general flock. They should be large enough to prevent the hen from crowding and thus breaking the eggs but not so large as to allow of too much freedom in the nest. A small coop which can be used as a brood coop after hatching will make a good nest coop and may be located in any place which is convenient about the buildings. In hatching chickens in large numbers a separate building should be used and a system of caring for the setters adopted which will insure that proper attention has been given to the hen at all times. Broody hens that are quiet and tractable should be selected for hatching purposes. Do not select a very large hen nor one that is old and clumsy. They are liable to break the eggs and trample the chickens hatched out. The hen and nest should be well dusted with a good insect powder or sulphur. The powder should be well worked into the feathers of the body and about the vent, and under the wings where lice are apt to gather on the body. Infertile or nest eggs should be given her for a few days or until she has shown signs of making a good setter and will take up with her new quarters. It is a good plan to set three or five hens at one time and after the first test, the rotten and infertile eggs should be removed. The remaining fertile eggs should be placed under the hens giving each hen thirteen and all spare hens reset on fresh eggs. The hens set on the new lot of eggs will have to remain one week longer on the nest but they will not be injured in doing so, when fed properly. The sitting hens should be fed once each day and provided with a dust bath, plenty of fresh clean water and left undisturbed. Corn and wheat should be used for feed and the hens should be taken off the nest if they will not come off of their own accord for feed. If eggs are broken in the nest the balance which are soiled should be cleaned and fresh clean material placed along with the eggs in the nest. The hen should not be allowed to remain off the eggs too long or they will become chilled. If one has reason to think that eggs were chilled it is better not to throw them away until after the regular testing period and by the use of the tester, with a little experience, one may be able to tell if the chickens have been chilled beyond recovery. When feeding on the nineteenth day the hen should be dusted with the insect powder and left to herself until all the chicks are hatched out. This will usually be on the evening of the twenty-first day or in some hatches may go over to the morning of the twenty-second day when all chicks should be out.

The hen may be taken off the nest but the chicks should be left with the hen. The chicks do not require any feed for thirty-six or forty-eight hours after they hatch. They should be left to become "nest ripe" and absorb the yoke which is nature's provision for their first feeding.

The natural method of incubation, in its season is the better and more economical than the artificial. It taxes the poultryman less and when the hens are properly attended will give as large a percentage of chicks as the artificial method. An experience of a number of years has led the writer to the conclusion that for an ordinary farmer or poultryman raising not more than one hundred chickens each season the natural method is the better both for incubating and brooding chickens. A great many persons have been led to part with their hard earned cash for incubators and brooders and have regretted the outlay and found out that the old hen, fickle as she is in many ways would do a better job in a small flock than the incubators and brooders. A successful experience in natural incubation and brooding is almost indispensable to success with the artificial method.

Artificial Incubation:—The results obtained by artificial incubation depend to a great extent upon the vitality of the eggs, which in turn depends upon the constitutional vigor of the fowls which produce them. This vigor comes from generations of strong healthy fowls and no amount of good care and feeding will make up for neglect or carelessness which has caused the loss of vitality in the fowls. The chickens may hatch but the lack of vigor will be the cause of loss when the chickens are being reared. It is therefore of great importance to success that the eggs used in incubators are from stock which have an abundance of vigor and vitality. The weaklings may grow to maturity by good brooding and care but sooner or later trouble will result. The eggs should be of one kind, size and color; under these circumstances they will hatch much more uniformily. The difference in the color of the shells make it harder to test the eggs; the white shells will show the germ while the dark colored shells are sometimes very difficult to test properly. Smooth even eggs which are characteristic of the breed and not more than ten days old should be used. The eggs of ducks and hens should never be placed in the same incubator. Once the machine has been filled and started additions of more eggs should never be made. Sometimes it may be found an advantage to start a hatch of eggs in an incubator and after the first test has been made to transfer the eggs to setting hens. This is a practise which has become common on farms where only one machine is used and a small flock of chickens are raised each year. It has some very decided advantages, which can be taken advantage of by the novice in artificial hatching without risk of loss and with a greater chance of rearing the chickens to maturity successfully.

Incubators:—An incubator may be defined as a machine by means of which eggs are kept at an even temperature until they hatch. There are a great many different styles and types of incubators which one may select. The small machine which holds 30 or 50 eggs to the large compartment machine holding as many as several thousands of eggs.

The essential parts of the different makes of these machines are the same. The source of heating varies from coal, oil to gas or electricity. The egg chamber in which the different trays of eggs are placed is always separated from the heating apparatus. The different methods by which the heat gets to the egg chamber are by contact, radiation and diffusion.

The contact incubators are not in use at present time to any extent. In this type, the eggs were placed on the top of a heated tank. In radiation, the heat is radiated from pipes or radiators that are heated by hot air or by hot water pipes. In the diffusion plan, the hot air passes over a hot drum or heater and then into the egg compartment of the machine. There are several combinations of these different plans, all of which try to effect the even temperature in the egg chamber at as low a cast for fuel as possible. Hot water circulating through pipes is also used to a great extent, especially in the large, section plan incubators. The selection of an incubator by a novice is a difficult task. One should look closely to the workmanship and quality of the case and also should see that the machine is equipped with a firm, strong, sensitive thermostat. This is the control apparatus which is located in the egg chambers, and expands and contracts with the rise and fall of the temperature in the machine. Whenever the temperature goes above 103° the expansion of the theromstat causes the top of the lamp flue to lift up and allow some heat to escape, thus keeping the egg chamber from becoming too warm. As the temperature in the egg chamber lowers, the theromstat will release the regulator which will fall back on lamp flue and cause all heat to go into the machine. Another point which should not be overlooked in selecting a machine is to see that it is equipped with a thermometer of reliable manufacture. The machine may be perfect in manufacture but if it is equipped with a poor or inferior thermometer will be the means of causing the loss of the hatch. This may occur several times before one becomes aware of the fact that the inferior thermometer is the cause of failure. It is our experience that for best results the thermometer should be suspended about two inches above egg tray and give the temperature of the egg chamber rather than the temperature of an egg on the trays. If special directions are given with the machine to do otherwise, I would attach the thermometer in the centre and about two inches from bottom of egg tray in mid air of egg compartment.

The temperature at which to run a machine during a hatch should be the same as under the body of the broody hen. This is found to be 103° F. The incubator thermometers are graduated in such a manner as to be able to tell at a glance when the temperature has gone above or below this point. Care should be taken to note carefully the amount of evaporation which takes place in the incubator and if too much takes place, close ventilators, if not enough open ventilators. The novice in running incubators, can be guided by comparing the eggs set under hens with those set in the incubator in order to get the proper amount of air cell. The moisture in the incubator plays a very important part in the hatching. The results in the hatching depends to a very great extent on the evaporation. When too much evaporation takes place in the machine the air cell will be large and the embryo chick will be small and weak. When not enough evaporation, the chick becomes too large for the egg space and when time to come out of the shell, will likely smother. Many complain of chicks dying in the shell on the nineteenth day, which complaint is due to the excessive moisture present in the incubator. The excessive moisture is sometimes due to the damp and poorly ventilated rooms in which the incubators are operated.

They should be operated in rooms which are dry and well ventilated. It is not a good plan to operate an incubator in a room or cellar in which a stove or furnace is run as the air of such room will become to dry. Incubators do best in a dry cellar, without furnace heat, which has a farrly uniform temperature between 60 and 70 degrees. If the cellar is partly above the level of the ground it will be better for ventilation. A good opening should be made near the ceiling to take off all odour from the oil and vents should be provided to allow for the inflow of fresh air in the room from the outside air. The control of ventilators should always be under the operators direction at all times in order to get the best results. When the weather becomes warm, more ventilation is required, less in cold weather. Sudden changes should be guarded against at all times, by providing plenty of lamp flame and if the incubator is equipped with a proper thermomstat and regulator, the surplus heat will do no harm to the eggs.

The lamp should be filled each day with the best quality of oil. Oil which encrusts the wick is not fit to use in incubators. The lamp should be filled at night as it will burn best after trimming and refilling. The wick should be of the best quality and attention should be paid to burners to see that they do not become filled with charred wick. This neglect is often the cause of accidents. The burners should receive a thorough cleaning and new wicks provided at the end of each hatch.

In starting a machine care should be taken not to heat it up too quickly as if heat is applied quickly the lamp flues will smoke and become too hot, which may melt the solder on flues. The incubator should be run for several days at a constant temperature of 103 degrees before the eggs are put into the egg chamber.

The trays should be filled evenly and eggs should not be overcrowded into them as it will only result in loss by breakage when turning. The temperature will drop to a very low degree when the eggs have first been placed into the machine but the regulator should not be touched. The temperature will return to 103 degrees after the eggs have all become warmed and should be kept at this degree during the time of incubation. Some manufactures require their machines to be run at 102 degrees the first week, 103 the second and 103½ the third. Our experience has led us to believe that best results are obtained by the even temperature of 103 degrees during the three weeks. Care should always be taken that the temperature does not get below 103 degrees on any account after the evening of the 19th day of incubation.

The eggs should be turned after the second day both morning and evening up to and including the evening of the 19th day. The turning that they require is simply to change their relative positions. It is sometimes stated that the eggs should be marked and turned up to one mark at the morning turning and to the other mark at the evening turning. This is not necessary.

The eggs should be cooled for a short time at the end of the fourth day and continued up to the end of the 19th day. During the first week if the room is cold, the cooling which the eggs get at turning will be all that they require. After the first week, cool from ten to fifteen minutes. The temperature of the room should be a guide to the time allowed the eggs for cooling. They should not be cooled or turned after the evening of the 19th day. They should not however be cooled at any time to such an extent that the temperature will take longer than from one half to two hours to get back to the 103 degrees.

Care should be taken at all times that the eggs do not receive any jarring and they should be handled carefully, They should not be handled more than is necessary to attend them properly. Avoid handling eggs of any kind with dirty hands. The eggs should be turned and cooled before the lamps receive attention. If an accident happens by which the temperature goes above 103 for a short space of time do not become alarmed but continue the hatching and it is likely that if the overheating has not been too prolonged very little injury will be done the eggs.

The eggs in the incubators should be tested on the 7th and 14th days in the same manner as outlined at the first portion of this article. A record should be kept of each incubator set, which should include the number of eggs set, when set, number tested out first test, second test, number removed, number remaining after testing, number not hatched, number of chickens, percentage of fertile eggs hatched, percentage of fertility and any other remarks which would in any way be a guide to future hatches.

A temperature record should also be kept of each hatch. This may be done very quickly by the use of the plotted line system of records. The following is a sample of the record sheet in use at our Poultry Department.

INCUBATOR
TEMPERATURE RECORD.

Incubator No.......... When Set....................

Days Hatching	DATE		Time of Records		99	100	101	102	**103**	104	105	106	107
1													
2													
3													
4													
5													
6													
7													
8													
9													

At any time in taking records, if it is required to mark a record of the temperature between 103 and 104 degrees it is done by writing the dot or x one half way between the lines marked 103 and 104. When the hatch is complete one may tell at a glance the record of any machine.

The more even the temperature, the better and more even hatch from the eggs.

The incubator should under no condition be allowed open after the evening of the 19th day. When the chickens are coming out there is no reason to fear if the temperature goes up to 105° or 106°. If in very warm weather the ventilators may be opened, during hatching providing the little chicks seem to be over-crowded or too warm.

If the eggs do not hatch on time, do not become alarmed and open machine. It often happens that eggs have been cooled too long and are late in hatching. Continue running the machine until the twenty-second day and if chickens have not come out the hatch has been a failure. This should very rarely happen. The chickens which hatch late will not be very strong and may hardly be worth rearing. As the chickens hatch they will come towards the light and drop into the nursery. This is where the chickens gain strength. They should remain in the nursery for thirty-six or forty-eight hours after hatching before they are removed to the brooders. If they show signs of over-heating, the door may be opened and some fresh air allowed into the little fellows several times during the day. Place the chickens into the brooders or under the hens at night.

Brooding Chickens:—The brooding of chickens may be divided into two systems the same as the hatching:—natural brooding and artificial brooding.

Natural Brooding:—In brooding with the hens there is little labor entailed except the providing of proper brood coops to protect the hen and her brood from enemies and vermin and the supplying of the proper feed to the growing chickens. A great variety of brooder coops could be here outlined if space permitted. The old fashioned manner of a barrel and tying the hen down to the modern down-to-the-minute brood coop which the poultry supply companies offer for sale give one a good range to choose whichever they prefer. The coop should be tight and light in order that it may be moved to fresh ground frequently. A wire run should be provided to keep the chickens within reason and to confine the hen. The person raising a large number of chickens by natural incubation and brooding should provide a shelter or protection for the small brood coops and flocks during cold wet weather in spring and early summer. The feeding and care of the hen should be regular and the chicks should not be over fed at any time. Clean boards about twelve inches wide should be provided for this purpose As the chicks grow older proper protection of the younger chickens from the older ones in the shape of frames will ensure the feeding of them properly at all times.

Cleanliness should be the watchword in feeding and caring for the creatures if they are to make the growth nature intended they should each day. It should be remembered that if they miss a feed or lose one day's growth it can never be recovered. Each day the attendant should make it a practice to feed only what they will eat up clean at a meal and only at night give them enough to fill their crops.

Do not allow chickens to over crowd at night and at weaning time provide suitable coops in which they may not become too warm before the morning. During the warm nights in summer, all the protection required is a roof over their roosts and a shed shelter from wind storms. The chills which follow over heating even in summer will cause trouble in a flock which will mean loss and death to the flock if not prevented in time. The sexes should be seperated and placed in seperate runs or yards as soon as this can be determined. The pullets should be placed into laying quarters before the cold winter weather has set in, so that they may become accustomed to their new quarters early in the season,.

Artificial Brooding:—A great improvement has been made in the artificial brooding of chickens during the last few years. The first brooders which were placed on the market had little of utility qualities to commend them. They were purchased by persons who had very little experience and after several years of very trying experience were condemned. Improvements were made in the construction of the hovers and heating arrangements but after fifteen year of experience the writer has concluded that the results from small brooders do not justify their use by farmers in these Maritime Provinces.

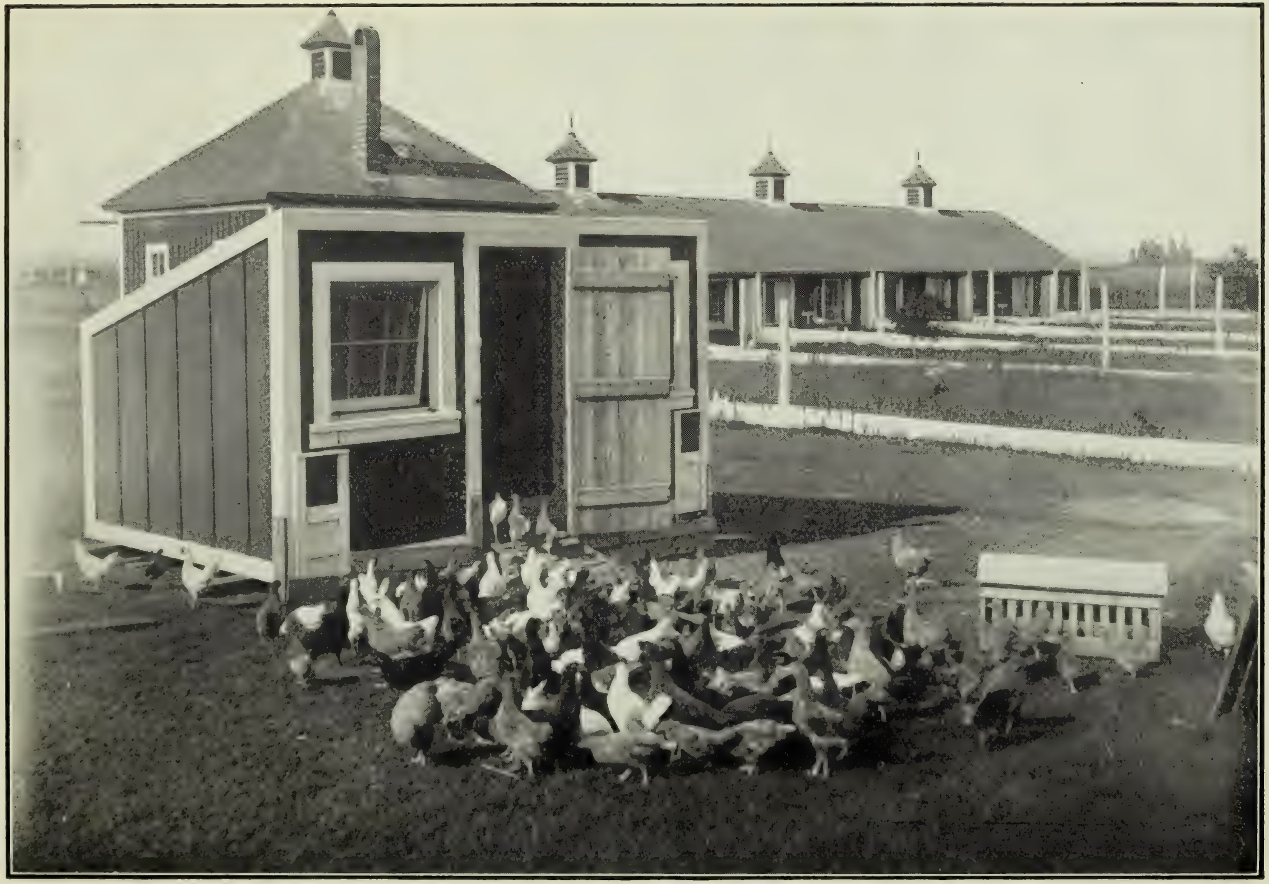
The farmer or poultry fancier who rears not more than one hundred chickens will have better chickens, less labor and more satisfaction with the work if he hatches and rears by the natural methods. The persons who rear more than this number will be better equipped with a small brooder house which has a modern brooder stove installed than the collection of small brooders which at best require a lot of labor to keep in good condition and accomodate but a small flock of chickens.

The expensive pipe systems which are placed in some poultry plants have never appeared to the writer to be a good investment. The plan of the small brooder house which is included in this article is one which has in practice given entire satisfaction in rearing chickens of greater vigor than any other artificial system tried. The chickens are reared in the brooder house until about six to eight weeks old and then placed in the colony coops in flocks of one hundred to one hundred and fifty with a partition between them, dividing each house into two flocks of seventy-five chickens each. The oil heater works satisfactory but has a drawback in the cost of this fuel. It is our intention to try the use of a coal heater in one house this season and thus overcome this objection.

The small brooders are useful for the growing of a few chickens, providing one has the time to attend the outfit. They are not to be considered on a poultry plant of any size owing to the amount of labor involved in their care and the limited capacity for handling the chickens. Brooding boxes of different types have been advocated by persons of some experience during the last few years. Some are fitted out to receive a heater, others have no heater but have a compartment which is used to receive a jug of hot water, at certain periods in order that the chicks may be kept warm. They have objections which apply to all the small brooders and after some experience an operator will be of the opinion that for economy of labor and general satisfaction the old reliable broody hen will raise to maturity as many chickens of as good quality as any brooder on the market, notwithstanding her proverbial contrariness.

The brooder should be prepared for the chickens by warming it up for two days before it is to be used. The floor should receive a layer of dry sand to a depth of one inch and a good covering of chaff or cut straw placed on top of the sand. The temperature of the brooder room should be at 98 degrees four feet from the brooder stove. In the brooder house this will provide a temperature which the chicks may select to suit themselves. They will not take long to locate the source of heat after they are placed on the floor.

The placing of the chickens should be done quickly and care should be taken that they do not get chilled from the incubator to the brooder. This should be done in the evening and the chicks left to themselves until morning. Water fountains, feed dishes, etc. should be placed in the brooder the same time the chicks are placed, as they drink very little until bedtime the first evening, giving the water overnight to become slightly warm, as it is not advisable



Colony House and flock of chickens at Poultry Plant Agricultural College.

to give little chicks cold water the first drink. The following morning large flat hoppers of bran should be placed about the stove, and should be of a height that the little chicks can jump into them easily. A wide board should then be used placed close by the chicks and a large quantity of chick food sprinkled over the board. Charcoal should be added to this first feed. If the chicks are not attracted to the board and, do not begin to eat immediately, a slight tapping of the finger on the board, will draw their attention and they will soon begin to pick the feed. Continuing this for a few days will have all the chickens scratching in the litter for particles of the grain mixture.

Care should be used about the feeding of the chicks for the first few days. If they are fed too liberally of the fine grain, they will over eat and it will sour in their crops and cause diarrhoea and death. The hoppers of dry bran should be kept full and any fine particles of bran should be removed as the fine portion is useless as a feed for the little chicks. The quantity of dry bran which the little chicks will consume is surprising.

Provision should be made to supply the little chicks with vegetable matter. This should be fed daily. Finely chopped potatoes, turnips, lettuce or other vegetables may be given. After the first week some form of animal feed should be provided. Finely chopped eggs, liver, meat or the prepared meat scrap of good quality may be fed. Care should be taken that the young chicks do not get too much as an over feed of it will cause bowel trouble.

The brooder should be aired well each day. There is little danger of ailments if everything about the chicks is kept in a sanitary condition. The water should be changed twice each day in cool weather and three times when the weather is warm.

A great variety of rations may be used to feed little chicks but the following have been tried and have proven very satisfactory.

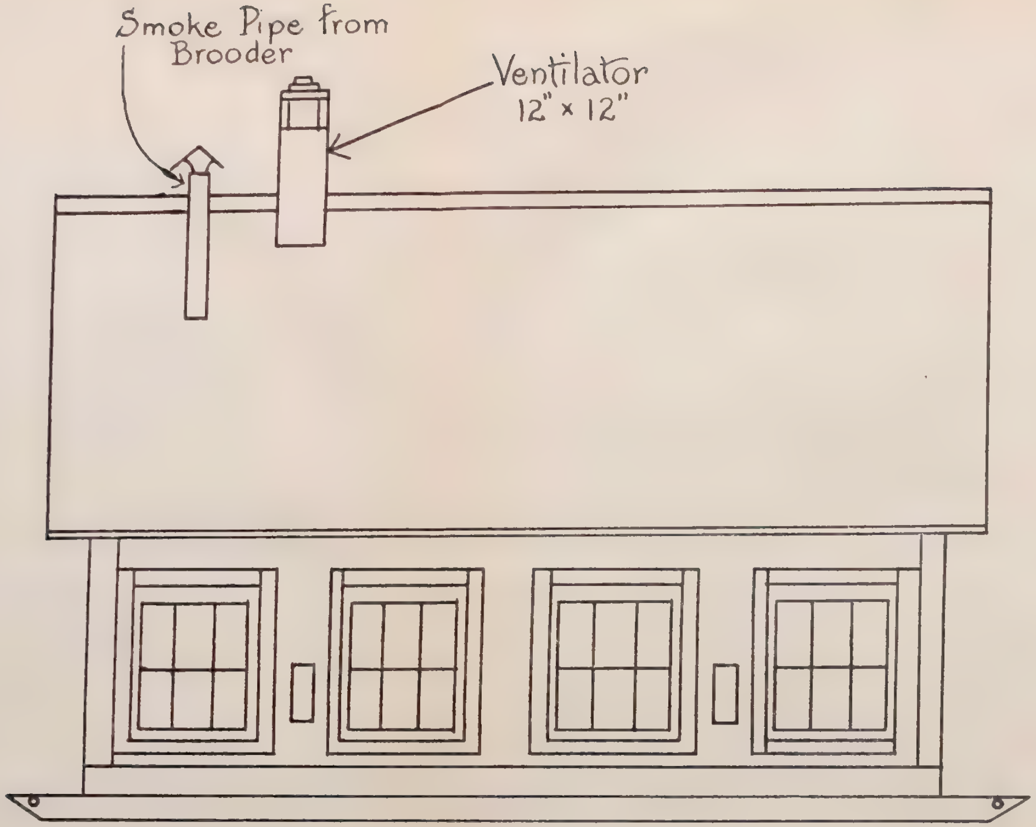
Ration No. 1.—First feed, eggs, hard boiled, chopped fine and mixed with eight parts of fine stale bread crumbs. Fine chick feed in litter and dry bran in hopper. Alternate egg mixture and chick feed. Chick feed for the last feed at night. Provide charcoal and fresh water, Vegetable or green feed once each day. When chicks will eat give fine cracked corn and wheat in place of chick feed.

Ration No. 2. First ten days:—rolled oats, or pin head oat meal, alternate with dry bread crumbs; boiled milk to drink. After ten days feed mash of 2 parts bran, 1 part corn meal, 1 part ground wheat twice each day and feed cracked wheat and cracked corn in litter three times per day. If chicks do not eat cracked grains feed, less of the mash until they begin to eat the cracked grains. Supply grit, green feed and animal meal freely.

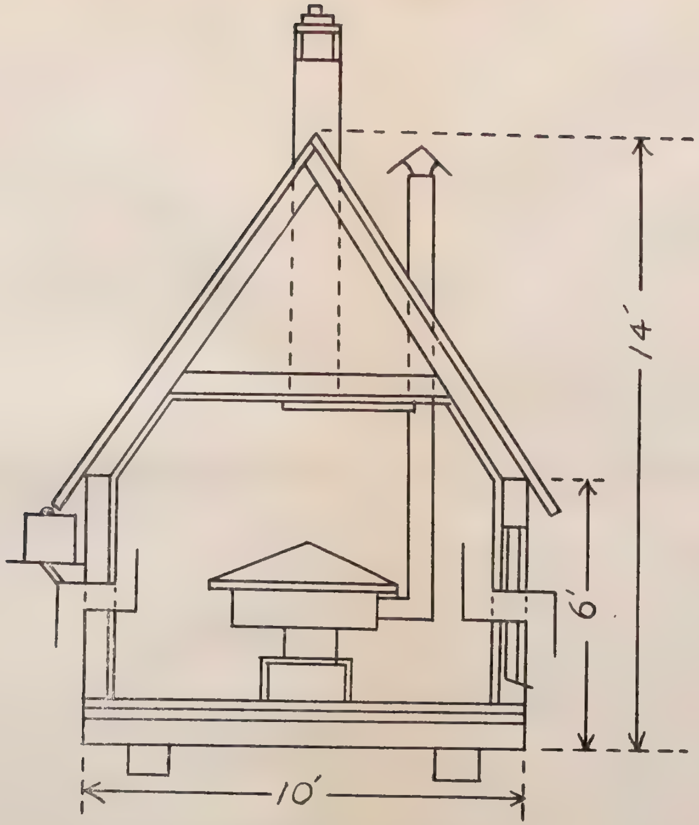
Ration No. 3, First week—same ration as No. 1. After first week feed dry mash of middlings one part, ground corn one part, shorts one part, beef scrap one handful to pail mash, and one pint of ground charcoal to pail mash. Chick feed and cracked corn in litter. When the chicks become old enough the mash is mixed with a little water or milk before feeding. Feed only what mash will be eaten up quickly twice each day..

If one is not able to obtain the chick feed use instead, 4 parts of fine cracked corn (the fine meal should be sifted out) 2 parts of cracked wheat, 2 parts of coarse cut oat meal and 2% of millet seed. To this should be added some granulated beef scraps. If a good supply of milk is available the beef scrap may be omitted from the ration.

There is no method of feeding chickens which will insure success. The feeder should pay close attention to regular feeding and use only clean sweet grains for the rations. Close attention to the condition of the chickens at feeding time will be a guide to the experienced feeder as to the quantity to feed. If some grain is left at a meal, less should be supplied for the next. It is a very good sign to see the chickens come out to meet the attendant when feeding and indicates that the system of feeding is good. If many of the chickens thrive and a few do not, this indicates a lack of vitality in a few, if the entire lot fails to flourish it is evidence either that vitality is lacking or that the ration is wrong. When this latter occurs, the ration should at once be changed to one of cooked food. Use boiled milk or rice to correct looseness in the bowels and if the chicks are costive induce them to eat more green food.



FRONT ELEVATION



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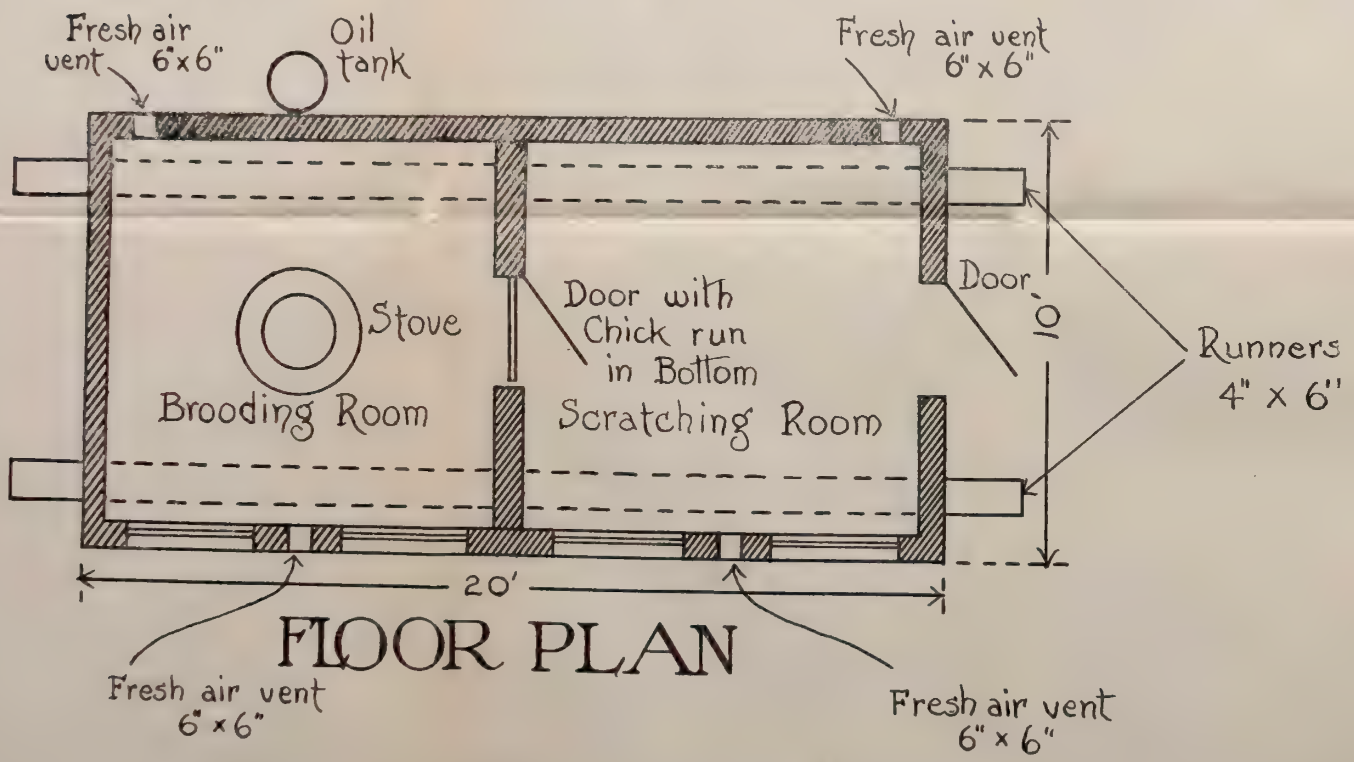

FLOOR PLAN

PLAN OF
BROODER HOUSE

J.P.L.

SCALE ¼"=1'

SIMPLEX BROODER HOUSE.

By J. P. L.

The Poultry Department of the Nova Scotia Agricultural College has been experimenting during the past number of years in the artificial hatching and rearing of chickens. Very satisfactory results were obtained in the hatching of the chickens but it was not so easy to rear them. A great many different kinds of brooders were tried and the results were not always satisfactory. The small brooders would give fair satisfaction when new but after one season's use could not be relied on to keep the chicks warm and comfortable. The cost of oil for a number of small brooders was a drawback which hindered the production of a large number of chickens. The small lamps would not maintain sufficient heat under the hover to keep the chicks comfortable on cold wintry nights and before morning they would become chilled and many would be chilled beyond recovery. The conclusion we arrived at was to discard the use of the brooders and hatch and rear the chicks by natural means. Our experience was similar to what other experimenters had found out and we decided that it would be an advantage to begin at once a system of natural hatching and rearing. At the same time we received several requests from incubator companies who wished to install large capacity, hot water pipe brooder systems. The outlay for such systems did not appeal to the writer as likely to meet with the approval of the poultrymen of small means and besides the plants of this kind which we had knowledge of, were not altogether satisfactory.

A personal friend travelling in California, and knowing of our experiments in this line was kind enough to forward a description of the system followed by practical poultrymen in Petaluma County, Cal. which was very successful.

Small buildings were built and were fitted with a heater in one compartment. The chickens were allowed freedom into a second compartment which was not heated. This allowed the chicks to select the temperature which suited them. The building was small and inexpensive. It was built on runners so as to be moved about from one site to another. We constructed a similar house and the results were very satisfactory indeed and the chickens grew stronger and better than any other system we had tried.

The following is a brief description of the house. It will take care of four to five hundred chickens. The labor is reduced to a minimum and if one requires to raise larger flocks a second or several houses may be erected.

The size of the house (see plan and illustration) is 10 x 20 feet, with side walls four feet high and a gable roof one-half pitch. It is double boarded on the walls and floor with build ing paper between the boards and battons nailed on the outside cracks. It is ceiled inside and one-half way up the rafters. It is divided into two rooms by a partition in the centre, the inner room being the compartment used for the heater. A door is placed in the centre of the gable end of the house and a door in the partition which is cut off six inches from the floor allows the chickens to go from one compartment to the other. Four windows are placed in the wall on one side close down to the floor. Two ventilators are placed on each side of the building and are covered to protect the chickens from direct draft. A ventilator shaft 12″ x 12″ is placed in the centre of the inner room, in the ceiling. The ventilators are all protected by covers and may be opened or closed at will of the attendant. The circulation of air in the building insures fresh air to the little chickens at all times without making a draft. The oil tank is supported by brackets on the outside wall and the oil is carried to the stove by means of a 1-4 inch gas pipe. The stove is placed in the centre of the inner room and the temperature is raised to 90 degrees before the chicks are placed into the house. The chickens very soon learn to locate the source of heat and at night make a circle around the stove at the distance from the stove where the temperature is to their liking. On stormy days one may go into the brooder house and at a glance tell the condition in which the chicks are in and make any changes necessary. A thermostat and regulator control the flow of oil to the stove and the temperature may be kept at any degree desired. There is no danger of the light blowing out and the chickens becoming chilled. On fine days the chickens are allowed out on the fresh grass by opening one of the windows. When the ground becomes dirty and foul in front of the house at one site, it may be removed to another by attaching a chain and pair of horses to the ends of the runners under the building.

The following is a list of material used in the construction of the building.

Lumber.

1900 ft. B. M. rough boards.
1025 ft 2″ x 4″ scantling.

300 ft, boards 11 inches wide dressed on one side for outside wall.
1300 sheathing for inside ceiling and floor.
250 lin. ft. battons 2 1-4″ x 7-8″
2 Pcs. 5″ x 7″, 25 ft. long
4 Pcs. 10′ long 4″ x 4″.
100 lin. ft, 6″ wide finish boards
100 lin. ft 4½″ wide finish boards.
250 lin. ft 5″ wide finish boards.
200 lin. ft. quarter round.
2 batton doors, 6′ x 2′6″
4 window frames and sashes for six lights 10″ x 14″ glass.

Hardware, etc.

10 lbs. 5″ spikes.
10 lbs. 10 D nails.
50 lbs. 8 D nails
2 rolls "Peroid" roofing.
2 rolls building paper.
24 lights 10″ x 14″ glass.
2 prs. hinges.
17 lbs. putty.
1 pkg. zince points.
4 pairs 2″ butt hinges
2 pairs 4″ strap hinges.
1 night latch.
1 pair large brackets for oil tank.

POINTS ON TURKEY BREEDING.

By J. T. Crangle in "Turkeys" by Reliable Poultry Journal.

Bronze turkeys are more raised than any other variety, for several reasons, first, they are the largest, second, they are hardy and well adapted to this climate; third they are good layers and the best of mothers, fourth, they are most satisfactory for marketing being full-breasted and possessing the desired color of flesh. They will lay from eighteen to forty eggs a season under proper care.

Generally it is considered that one male will mate with six to ten females. I have used one male for twenty-five hens, but I do not think it well to risk using only one male with your entire flock, (especially if you have more than eight or ten females) for the following reasons: A female usually allows the male to tread once. If from any cause the male did not effect proper connection, the eggs would not be fertile and the best part of the season would be lost because the first litter is considered the best.

The hen after connection selects a spot for her nest and a few days after it is made. This is usually done by scratching up the earth so as to make a hollow place to keep the eggs from rolling out. A great deal of the risk of males not fertilizing the eggs could be avoided in the following way. Use two toms alternately every day but under no consideration allow both toms to run with the females at the same time. If you do you will as a rule have bad luck as the males will fight and at times hurt themselves, also the females.

The lack of fertility in eggs and vigor in young poults is one of the main reasons for the decline in turkey breeding in Canada and United States. In many of the eastern states where a few years ago hundreds of tons of turkeys were raised they now have to import mostly from western states, to meet the demand, as it seems almost impossible to raise them. I think the main cause is in breeding. There are many farmers who in the past have not thought it necessary to obtain new blood and who thought they could save a few dollars by borrowing a tom from a neighbor, in this way using the same blood year after year. This has been done for so many years that the vitality has been about bred out. For the past few years turkey breeders no doubt have seen their folly because many of them are now looking months ahead for a good male. The vitality had gotten so low that it created disease, and I am sure that many of the turkey diseases, with which we have to contend have been caused by lowering the vitality of the turkey. I believe there is no other variety of birds in which the vital forces decrease so rapidly by in breeding as in the turkey.

I think it is possible under proper management to raise turkeys in every state in the Union and I believe if farmers in general will be more careful abour in-breeding and will see that they have the proper kind of males to breed from such as will introduce nice, strong, hardy blood into their stock, they will be able to raise turkeys as they have in years gone by. To people who are having trouble in raising turkeys I advise using a half wild male if they have a large range It is almost impossible to get a pure wild tom in this country although you may happen to run on one by accident. About all the people who claim to have wild turkeys have nothing but half-breeds yet with a half wild tom you can get enough new blood to make the offspring very much stronger, and this will be noticeable the first season.

The Laying and Hatching Season.

After the turkey commences to lay, in many sections of the country, the nights are cold, and in many places the thermometer goes down to the freezing point. When hens are laying and you are afraid of frost the eggs should be gathered every evening and marked with the date. Then they should be placed in a pan or basket in common wheat bran with the big end of the egg down and by so doing you will keep the air cell in good condition. Put them in a cellar or any cool place and turn them every day. It is not best to turn them completely over, turn them only part way over each day. It is safe to keep them ten or twelve days but I would not advise keeping them any longer than possible, as they are liable to get stale, in which case not so many of them would hatch. When the eggs are removed from the nest a glass egg should always be put in. If you do not put glass or wooden eggs in the nest the hen will probably leave her nest and lay elsewhere.

A good mother will cover her eggs when she leaves her nest; usually this is done with dry grass or leaves, so that in looking for a turkey nest it is always necessary to be careful as otherwise one might step on it. An ordinary hen will cover eighteen eggs. If she lays more than that number take the extra ones, and put them under a common hen. The turkey hen can brood eighteen poults with safety. Above all things see that there are no lice on the hen when she hatches, as the poults are very tender when hatched and if the hen has lice the poults will have them on their bodies within a few hours. When you transfer poults from common hens to turkey hens, dust them well with a good powder, as you want to be sure there are no lice on them.

It takes twenty-eight to twenty-nine days to hatch turkey eggs. If the turkey does not leave her nest at that time do not disturb her for at least twenty-four hours, because oftentimes a few of the eggs are slow in hatching and she stays on the nest several hours after they are hatched for the poults to gain strength. It is always well to take a piece of stale bread moistened with milk and put it near the nest, near enough for the turkey hen to reach it. If the poults are hungry they will also eat. This food is very important because if the hen is hungry she may leave her nest before she should, looking for food. We must remember she leaves her nest only three or four times in twenty-eight days. If she does not appear inclined to move to get the food, do not disturb her, as it is a very easy matter to find out whether she has hatched any young, for as a rule broken egg shells will be seen near the nest. At the expiration of thirty days, if you see no sign of the young turkeys, it will be well to investigate the matter by raising the turkey off the nest and ascertaining whether the eggs are fertile or not. If they should prove to be infertile, shut up the female for four or five days in a coop large enough for her to get a little exercise. Give her food and water and a place to dust herself and in three or four weeks she will lay again.

One of the best places in which to let the hen turkey run with poults is a field where the grass is short. As a rule, a pasture is very good; woodland is also suitable. Keep them out of long grass and grain fields when there is a heavy dew or it is rainy until after the grain and hay are harvested, because the wet vegetation is bad for the young poults. It chills and sets them back in their growth and often is fatal. You will always find the largest and finest turkeys where they have free range. As a rule, turkeys will wander some distance from home during the day, but will come back to their home every night. Under proper management you can place turkeys anywhere you wish on the farm, and by teaching them to roost in one particular place they will come to regard this as their home, and will know no other; you will always find them wherever they have been taught to roost. This can be done by watching them a few nights in succession and driving them to a place where you wish them to stay. Just before dark they will go up in the trees or on a roost that has been put up for them. With the right kind of breeding turkeys at Thanksgiving time should weigh about as follows: toms, sixteen to twenty pounds; hens twelve to fourteen pounds. I have dressed at six months old, turkeys weighing twenty-four pounds but they are rare.

Feeding the Breeding Stock.

There are two things which have to be done in order to have success in breeding. One of them is to get the right kind of breeding stock, and the other is to feed them properly These are the two main things. The proper way to feed breeding stock is to be careful not to overfeed them. After your breeders are selected, feed almost entirely on oats (scalded). I find they do better on oats than on any other food. For a change feed whole corn about twice per week, and at no time feed more than they will eat clean. Where turkeys have a barnyard to scratch in, you will have to be careful not to get them overfat and as a rule, it is only necessary to feed them at night. A good accompaniment to the food for turkeys is charcoal ground coarse. Put it in a box where they can find it. They also need shells—oyster shells are best. On a farm they can ordinarily find all the grit that is necessary for them to have. If the hen turkey has not enough lime to properly supply the egg shell it will be porous. I have known many germs to die on this account.

Diseases and Injured Stock.

Under no consideration breed from a diseased turkey. It is much easier to kill a sick turkey than to let her among your flock of healthy birds. When the males mate with the females and they are extra heavy and clumsy, it is well to see that the male does not tear the female or hurt her back. A very good way to prevent this is to file down the toe nails of the male. I have seen them many times slip off the female and rip open the hips or side. It is very easy to discover an injured female by her actions more especially the next day as she will be lame and her wings will droop. It is best to catch her at once and examine the wound, as generally they can be saved by sewing up the tear. This is not a very difficult matter. Let one person hold the turkey and another do the sewing. Pull all the feathers from the edges of the wound, and with warm water moisten them as they will stay back while you are putting in the stitches. Before sewing the wound should be washed thoroughly with castile soap, using a small soft sponge; than take a long fine needle and with white silk thread draw the edges of the skin together over the wound as you stitch until the tear is all closed up. Many times I have taken as many as fifty stitches in one wound. Bathe the wound with witch hazel every day for four or five days. It is well to keep the hen in a small pen or coop for three or four days where there is quiet, and where you can catch her without running. If you give her free range she might tear out the stitches. The period of confinement depends entirely on the size and the nature of the wound but as a rule, after three or four days she can be liberated with the rest of the flock.

Food for Young Turkeys.

As a rule many young turkeys are killed by overfeeding. On large farms where the hen turkeys and her poults have plenty of range, it is best to feed them only twice each day, once in the morning and again at night. Young turkeys can live on insects and many little grasses which they relish. You will always find that food they get in the fields will keep them in better condition than anything you can give them. During the berry season especially when wild strawberries are ripe, it is a pleasure to watch the little turkeys pick and eat them. In seasons when there is a good supply of grasshoppers, the turkeys will live almost entirely on them.

When young turkeys have to be fed the best food I know of is stale bread, but be sure the bread is not sour. By stale bread I mean wheat bread three to ten days old. Moisten the bread with sweet milk but do not get it too moist. I usually press out all the milk that I can with my hands. Clabbered milk is also good for young turkeys. Put it in a dish on the ground where they can get at it easily. During the warmest weather of summer it is best to keep all turkeys, young and old on the hungry side, for if you do not, there is great danger of their having bowel trouble.

I have told you how to care for turkeys on a large range. If you are on a limited range, or for any reason you have to keep your birds confined, I mean young poults, take three boards twelve or fourteen inches wide and ten or twelve feet long and make a triangular pen. In this pen put the old turkey and her poults. Do not confine the hen. She will jump out and in over the boards and will not leave her poults. It is best to leave the poults in this pen for fifteen to eighteen days and then let them range with their mother. Many persons think it is necessary to put the hen turkey in a coop to keep her near her young, but this is not the case as the mother will stay with the poults; you could hardly drive her away. When the young poults are confined in a pen as described, it is necessary while so young to feed them four times a day with stale bread moistened with milk. If the weather is rainy and wet, it is sometimes well to use red pepper enough to make the bread quite warm. If any of your poults are drooping it will tone them up. Clabbered milk is also good for them. Should you find that the young turkeys are drooping and do not seem to pick up, the very first thing to look for is lice. If your poults have lice or ticks they will not do well and it is impossible to raise them, you will find at times a large blue tick on turkeys and turkey poults; they are on the neck and head only. If you should find any ticks on your poults, pick them off, then use clear lard on the head and neck. It will kill the mites that would hatch if you did use some preventive. For the two other varieties of lice use any good insect powder, but always be careful that none gets in their eyes. Hen turkeys generally keep free from lice if they can find any place to dust themselves, but some are very lazy, and if these hens have poults they will be sure to be infested with lice, too. In looking for lice it is best to examine the little wings, as generally you will find them at the base of quills, also around vent.

For the terrible ticks, which are almost sure death, look upon the neck, push back the feathers carefully until you reach the top of the head. You can easily see them as they are good sized, and the older ones are dark blue in color, usually full of blood. If you keep your poults free from lice you will have overcome almost all danger of loss.

Stale bread moistened in milk should be fed to the poults for three or four weeks, then gradually get them to eat wheat and fine cracked corn. This grain should be scalded, as it will then assist digestion, but do not feed it until it has thoroughly cooled. Indigestion is very prevalent among turkeys, both young and full grown.

If your poults should have diarrhoea from any cause, one feed of boiled rice will usually stop the trouble.

Another common but sure relief is to give them red pepper, say one teaspoonful, mix it with about two tablespoonfuls of wheat middlings then moisten it with water, but do not wet it enough to make it sticky. Cut it up into about four to six parts and roll the parts into pill shape, put them in an oven and bake them hard. It is well to have a few always on hand, as after baking they will keep for a long time in a dry place.. If I have a turkey, either old or young, with a bad case of diarrhoea, I give one pill three times a day until the droppings are improved. Then give a tablespoonful of caster oil if the turkey is full grown, or a teaspoonful to a young poult. It is seldom that I cannot stop a case of diarrhoeea with this treatment.

Fall Feeding.

I commence to feed all turkeys the first of October to get them ready for Thanksgiving, as we all know there is more demand for turkeys at that time than for any other. They should be fed morning and night, but never more than they will eat within a few minutes. Most of the trouble we have in the fall is caused by overfeeding. At the time you commence to feed for fattening use common sense and feed lightly for the first ten days, gradually increasing the food. The principal food from October to January first should be corn, not cracked, and the older the corn the better, as new corn will cause bowel trouble. I have seen large flocks of turkeys knocked out by feeding new corn. If you get their bowels out of order, it will take weeks to get them in good condition again. As a rule, most of your turkeys will be fat and in good condition to dress at Thanksgiving. There may be a few late hatched broods that will be improved if carried over to Christmas.

Many people advocate putting turkeys in a closed pen to fatten. I have given this method a good trial many times and under all conditions and find it a failure. Let them have all the range they want. The results will be better and you will avoid the sickness they will have if you confine them. Many persons do not understand why their turkeys are not so fat as they should be, but almost invariably you will find that they have fed them in confinement and the turkeys could not stand it, especially for a period of several weeks. They go off their feed and will not eat. In the fall when the weather is cold, turkeys will not range far from the farm buildings. They will eat their morning feed, then roam around after a little grit to help them digest it and then lie down in a warm place out of the wind. Drive all the turkeys you wish to kill in a barn or shed so as to confine them twenty-four hours before killing with no food of any kind. To look well when dressed, their crops must be entirely free from food.

The Best Roosting Place for Turkeys.

Many persons who keep turkeys think they need shelter in the way of a building. That idea is entirely wrong. The best possible way of keeping turkeys in good health is to have them roost away from buildings, in trees if you have them. By roosting in trees they will not be in draughts, as they would be if allowed to roost in sheds or buildings.

I have known turkeys to roost in trees with the thermometer fifteen to twenty degrees below zero, and be much healthier than turkeys that were inside a building. A turkey can stand any weather we have in the United States if they are roosting in trees that are pretty sheltered from the wind. I have seen turkeys in trees during a snow and rain storm with the wind blowing sixty miles an hour, and they did not appear to mind it in the least.

A great improvement has been made in the size of turkeys, especially Bronze, in the past twenty years. The ordinary turkey of some years ago, as bred by the average farmer, would weigh about as follows; Toms, twenty pounds; hen, eight to ten pounds. Today Bronze turkeys will weigh: Toms, thirty-five to forty-two pounds; hens eighteen to twenty-five pounds. This shows what proper mating will do.

FEEDING FOWLS.

By J. P. L.

The kind of feed needed in a ration varies with the age of the fowls and with the purpose for which they are fed. The objects of feeding are three, to repair the waste of the system, to maintain animal heat in the body and to produce flesh and eggs which when incubated will reproduce the species.

In computing the value of foods, the digestible portion only is considered. It is important therefore to secure grains of a good food value. The most important element in any food is protein and next to the protein are the carbohydrates and fat. The ratio of the one to the other determines the nutritive content of the ration. The mixing of the foods, in any ration in the proper proportion, is called a balanced ration. A balanced ration is fed in order to avoid losses of the food material and should be fed wherever practicable.

It is not the intention to go into the composition of the different foods used in feeding poultry in a short article of this nature. Information of this kind may be had from the standard works on the subject, Henry's "Feeds and Feeding." Lewis' "Productive Poultry Husbandry" and Robinson's "Poultry Craft." A great deal of valuable information has also been published by the different Experiment Stations in Canada and the United States on this subject.

Fowls are classed as granivorous and will if compelled to subsist on one type of feed, do best on a ration of whole or cracked grains. Many kinds of grains are used for feeding fowls. The grains most widely fed and relished by all classes of fowls are; Corn, Wheat, Oats, Barley, Buckwheat, and Peas.

The water supply should receive close attention as it is the medium by which the digestive fluids act on the food, it regulates the temperature of the body, and assists to carry off the waste matter from the body.

A supply of good sharp grit should always be accessable to the fowls. It goes into the crop and from there into the gizzard where it remains helping to grind the grains into small particles which are more readily acted upon by the digestive juices.

Fowls in confinement require to be fed a quantity of animal food. Under natural conditions this is supplied in the shape of insects and worms found on the ground. To supply this food, a prepared beef scrape has been placed on the market which varies greatly in quality. When sweet and made from clean materials it is the best form of animal food available. In testing new brands of scrap, they should be fed with caution, as the scrap offered in some places is not fit for poultry food. To test a new brand of scrap, pour boiling water over a small dish of the scrap and cover for one hour with a cloth; if, after the hour is up, the scrap smells fresh and sweet it may be used without danger to the fowls. Scrap which contains particles of hides and hair is not fit to be used for food for fowls under any circumstances. The farmer who has a small flock of fowls and cannot get scrap will be be able to boil butcher scraps, table waste, etc, and add vegetable food to the mixture together with all the milk the fowls will consume and have a good supply of meat or portein food in the ration.

The ration for laying hens require a supply of mineral matter. This is necessary to supply the ash and lime to make up the bone and shells for the eggs. The lack of ash in the ration of the laying hens will induce egg eating, because soft shelled eggs are produced and the hens learn to eat their eggs. The easiest form in which this material can be supplied is in the shape of crushed oyster shells and dry wheat bran fed in hoppers.

Fowls kept in confinement during winter require to be fed vegetable food in some form. Vegetables make very desirable succulent food where they can be grown successfully. Mangels and beets make the best green food for this purpose. Cabbage and turnips are also good for green food for hens during winter. Sprouted oats make an excellent green food but in a country where roots can be grown as readily as in this Province, the advantage of sprouted oats does not appeal to one at the prices which are asked for them on the market.

A great many general systems are practised in poultry feeding, many which contain good points and many otherwise. The system in feeding is of very little use unless it is carried out properly. The following systems and combinations are in common use; Dry feeding of all grains; trough feeding of wet mash and dry feeding in litter of whole or cracked grains; all hopper feeding.

It does not matter which of these systems one may follow, as it is not difficult to point out the advantages or disadvantages of each system. The experienced feeder will be able to tell at a glance of the fowls whether they are being fed properly. The average farm flock will get a very fair supply of their ration from free range and at a very small cost to the owner. During the winter season, the feeding of the dry mash in hoppers and all the cracked grain in litter will be found the most satisfactory. A very good plan which is practised in many farms is the collection of all table waste and some vegetables, boiled and dried off with bran. This is fed as a mash at noon three times each week. If fed oftener will make the fowls very fat in a short time. The hard grains are fed in deep litter morning and night. On the days mash is not supplied the fowls are fed at noon a feed of raw vegetables. The quantity which a flock should receive at each feed will be governed by their appetites. It is a safe rule to feed only what they will clean up in a short time. If some grain is left in the litter from a previous feeding less should be fed. The dry or wet mash should not be fed too freely as it will fatten the fowls and when over-fat they do not produce eggs.

The following rations are recommended as good laying rations.

Maine Ration—200 pounds of wheat bran, 100 pounds of corn meal, 100 pounds of wheat middlings, 100 pounds of linseed meal, 100 pounds gluten meal and 100 pounds of beef scrap. This is mixed dry and added to one-fourth its bulk of clover leaves and heads or dried lawn clippings. If these cannot be had, boiled vegetables are used instead. Two quarts of cracked corn, one quart of wheat and one quart of oats, mixed, is fed in litter to fifty hens in the morning and at night during winter all the cracked corn the fowls will eat before dark is fed. This mash may be fed dry in hoppers. When this is done more vegetable food is supplied.

New Jersey Ration:—Wheat bran 200 pounds, wheat middlings, 200 pounds, ground oats, 200 pounds, corn meal, 100 pounds, gluten meal, 100 pounds, meat scrap, 100 pounds alfalfa hay, cut short, 100 pounds. The above ration is a winter mash, and during summer the alfalfa hay may be left out and one-half the quantity of beef scrap used.

Cornell Ration:—60 pounds wheat, 60 pounds corn, 30 pounds oats, and 30 pounds buckwheat fed morning and evening in litter. A dry mash containing 60 pounds corn meal, 60 pounds wheat middlings, 30 pounds bran, 10 pounds alfalfa meal, 10 pounds linseed meal, 50 pounds beef scrap and one pound salt. This dry mash is fed in hoppers and the fowls are only allowed at the mash in the afternoons. Grit and oyster shells are provided in boxes attached to the walls of the pens.

Ration for Laying Hens:—Morning, mash, 2 parts bran, one part corn meal, 1 quart cut green bone to forty hens every other day. Noon, cabbage and a little grain in litter generally oats or barley. Night:—Wheat and corn alternating.

Ration for Twelve Hens:—Dump all kitchen scraps into an old pot and cook each evening; salt slightly when cooking. In the morning of every alternate day heat up and add one pint of ground oats and corn meal. Make mash dry and crumbly by adding more bran to dry of the liquid. Twice a week add a little charcoal and sulphur.

Feed two quarts to twelve hens at noon 1 pt. wheat or oats in litter; at night, one quart of 2 parts wheat, 2 parts cracked corn and one part oats. Oyster shells, grit, etc, before fowls at all times.

In feeding a flock of hens it is not a safe rule to go by measure as their appetites vary greatly and an experienced feeder will not trust to measure. The fowls at different seasons will require different treatment. They should receive generous feeding molting which would if fed in the laying season make the hens entirely too fat for good results in egg production.

I would like to call the attention of a great many persons to the system of feeding which has been followed in too many cases in these Maritime Provinces. I refer to the feeding of grain almost entirely as the ration which the fowls receive during the winter. It is expensive, wasteful, injurious to the fowls and the results are very unsatisfactory in production. The feeding of plenty of vegetable food in the ration will give better results at less cost and will keep the fowls in a more healthy condition during the winter season.

For thirty fowls, one quart of grain mixture in the morning and two quarts at night may be taken as a fair guide. The feeding of mash should be regulated by the condition of the fowls and the quantity the fowls will readily consume.

Feeding of Ducks.

The feeding of ducks is not very well understood. They are considered greedy feeders and some state that it is impossible for to satisfy their appetites. This is a mistake. The larger breeders of ducks in the United States claim that it does not require more feed to raise an average flock of ducks than is required for to raise an average flock of the same number of chickens. They require water near their feeding troughs at feeding times. They will consume a large quantity of bulky fodder and if the supply of this bulky material is withheld the cost of the ration will be beyond what the ducks will pay for when marketed. During the summer the ducks can obtain a large quantity of their food on range, supplemented with two feeds each day of grain mixture. It is not necessary that the young ducks should have water in which to swim, but they should have water in dishes deep enough to cover their bills which will clear out their nostrils at feeding time. Ducks will do well on a great variety of rations. The following rations have been tried and will prove satisfactory.

Ration for Ducklings. When twenty-four or thirty-six hours old remove to warm prepared brooders and feed stale bread crumbs one part, bran one part, corn meal one part, and add 5 per cent of the meat scrap. If meat scrap is not to be had use hard boiled eggs instead; add to this 5 per cent of good sharp grit or sand and some green food moistened with water. It should be cleaned up after the ducklings have had a chance to feed on all they require. After two weeks, feed bran one part, meat scrap one-half part and five per cent of good sharp grit.

Fattening Ration for Ducks:—Feed three times each day of three parts corn meal, one part low grade flour, three-quarters of a part of beef scraps with 5% of grit and one part of fine cut green stuff. Provide water at feeding time, keep the ducks quiet and supply them plenty of shade on hot days.

Ration for Breeding Ducks:—Boiled vegetables one part, green stuff one part, beef scrap one part, low grade flour two parts, bran three parts and corn meal two parts.

Feeding Geese.

Geese require very little attention in feeding if they are given a good run in a pasture. They are readily fattened if given a little grain each day in addition to their pasturage. When it is required to fatten them the feeding of green vegetables to which has been added equal parts of corn meal, bran, and ground oats to make the whole mash light and crumbly, which should fatten them in three weeks.

The breeding geese should not be over fat. They do better on pasture and once per day, a feed of whole grain, preferably oats, may be given. They should be given all the drinking water they require and during the mating season should be provided with a pool or stream of water deep enough for swimming.

Goslings should not be fed too much for the first few weeks. The first feed should be stale bread soaked in milk and fed moist. Feed four times per day of a mash made up of equal parts of corn meal, middlings, and stale bread squeezed out moist. When six weeks old turn out with the mother goose into pasture and feed at night on equal parts of corn meal and middlings to which has been added 10 per cent of beef scrap.

The breeding geese should receive during winter a ration of hard grains at night and mash and vegetables for the morning feed. Equal parts of oats and cracked corn will be found a good hard grain mixture for night feeding. Equal parts corn meal and middlings with 5 per cent of beef scrap to which is added a similar quantity of finely chopped vegetables makes a good morning feed.

DON'TS FOR BEGINNERS IN POULTRY KEEPING.

By Cyphers Company Service Bulletin.

Don't start in the poultry business, on either a small or large scale, thinking or believing that it is a soft snap—an easy road to a quick fortune. There are so few roads of the kind that lead to quick fortunes that it isn't good judgment for us ordinary folks to waste time looking for them. Remember that whenever and wherever a prize is hung up, you will find other human beings reaching for it—striving for it. Also remember that in order to win a prize that is worth possessing we have to work hard, have to make the necessary preparation, have to apply ourselves—have to use our heads as well as our heels. Poultry keeping for those who like it is pleasant and healthful— and it can be made highly profitable, but in order to be successful one has to "know how" and must pay attention to details.

Don't start poultry keeping without a definite aim. A lot of people start to just "keep chickens." This is not a business-like plan. These people often end by "keeping the chickens instead of the chickens keeping them—as should be the case. Look over the field of poultry and egg production and consider carefully which main branch you intend to try, the fancy or the utility, so-called—meaning the production of standard-bred fowls, or market poultry and eggs. Next decide which breed or variety will best suit your taste, locality and market. In this respect it may be the right policy to follow the lead of successful poultrymen in your section. Don't take up with any but a truly popular breed of fowls. In other words, breed birds or turn out products that are in demand—then you will be able to dispose of your output to advantage. If you want to catch muskrats you must go where muskrats are. If your aim is to make money, then be sure to produce something that other people want and will pay for—will well pay for.

Don't start with any believed-to-be original theories of your own poultry keeping— brand new ideas that you intend to demonstrate. Make it your first business to learn all that you can of what is known and practised at the present time by truly successful poultry raisers. This will consume two or three years of your time—and perhaps more. Consult reliable sources of information. Beware of the advice of the fellow-traveler who has been in the poultry business himself less than three hundred and sixty-five days. He may be full of ideas, full of notions—let him try them out on his own account—and pay the bills. If improvements in existing methods suggest themselves to you, try them gradually and cautiously. In this connection remember that "one swallow does not make a summer." Because a thing succeeds once does not prove it to be an established rule or law. The outcome may have been purely accidental. Far too many persons are prone to draw conclusions from isolated cases.

Don't start with scrub or mongrel stock, but secure good specimens of the variety you decide that you want, or obtain choice hatching eggs or day-old chicks and raise your own flock. But in any case, buy only standard bred stock-birds or eggs therefrom that are free from disqualifications, as per the requirements of the American Standard of Perfection. Let one of your first investments be the two dollars that you pay for a copy of the Standard of Perfection. It is published, under copyright, by the American Poultry Association, is for sale by poultry papers and poultry supply dealers (we sell it) and it contains illustrated detailed description of all the standard-bred chickens, turkeys, ducks and geese produced in this country. Without this book you cannot know whether you have the right kind of fowls—whether or not they are right in size, in weight, shape, color, etc. You can get along without most any other poultry book, but you need this one and it is well worth the price.

Don't make the mistake of trying out a number of different breeds or varieties, to see which one you like best. Thousands of poultrymen and poultrywomen have done this, but it is not necessary or advisable, and it wastes time, wastes money—wastes opportunity. You wouldn't think of trying out a number of callings or professions to see which one you liked best. Life is too short for that. There is enough reliable information available to enable you to make a good first choice. Look before you leap—think before you act. Investigate first, not afterwards. By having more than one variety of poultry, especially at the start of your career, you handicap yourself greatly. If you have it in you to make a success, you can succeed with any popular breed or variety that is well suited to your purpose. If you plan wisely at the outset, you cannot go very far wrong on the choice of a variety.

Don't be misled by extravagant advertisements, which claim results greatly in excess of normal or average success. You may believe, if you like, that others have achieved the results they claim, or you may not believe it. But don't mortgage your own enterprise. Don't "swallow" the improbable. Don't believe in or expect the impossible. In your own interests look forward to fair average results. This is the one safe rule. Then, if you succeed beyond your hopes, the greater pleasure is yours—also larger profits.

Don't give your confidence—or your money— to a poultry breeder or a business concern until you have applied the same test that you would to a bank in which you expected to open an account. What would that test be? Responsibility. When reading advertisements, ask yourself: "Have these people achieved a position in the poultry or business world where they cannot afford to misrepresent.?" Remember that a really successful poultry breeder or leading business firm has "arrived" through honest service and real merit Business successes are not accidents. They are won by hard work, reliable goods, legitimate methods—on the basis of manhood and integriry. You must determine, who these poultry breeders, who these manufacturers are.

Don't buy cheap stock, cheap goods or cheap eggs. They are dearest in the end. You wouldn't expect to construct a really fine house of defective materials by the use of inadequate tools. Then why expect the poultry business to be an exception to the general rule? You desire to achieve the best possible. This is true whether you are to operate on a small scale or on a large scale. Then give yourself a fair chance. Buy the best stock or hatching eggs you can afford; also buy the best poultry appliances for the purpose you have in mind. In poultry appliances the best are none too good. You will want all the help you can get by the use of the best tools obtainable. Don't make the mistake of thinking you cannot afford to start right. As a matter of fact, anyone can afford to start right if he will begin small enough and exercise patience. Better start right on a small scale and build up, rather than to start wrong on a larger scale and break down.

Don't start too big. We are assuming that as yet you know but little about the poultry business—about keeping poultry for profit. In that case it really is you who are on trial, not the poultry business. The question is to determine whether you are suited to the poultry business, not whether the poultry business is all right. It is all right—positively so—for some persons. Are you one of them? That really is the first question—and you are the only one who can answer it. And you will have to answer it by your work, by results— not merely by what you may think about it. Put yourself to the test. That is the one sure solution.

Don't take up with new and untried propositions,. Remember the famous couplet:

"Be not the first by whom the new is tried,
Nor yet the last to cast the old aside."

Don't go into the poultry business by proxy. This means don't expect to hire all the work done, while you theorize and plan and dream and ultimately "cuss." You cannot properly boss a job that you have not personally mastered through actual experience. This probably is the biggest don't we have given you this far. Be willing to put on the overalls yourself. Nine times out of ten the real successes achieved in poultry keeping—in the poultry business—are secured by actual working up from the bottom round of the ladder. We do not mean to say that you cannot climb rapidly, because hundreds, in fact thousands have done so, but we do say that you must do your own climbing. The man who can succeed for you is in business for himself. In nineteen cases out of twenty such men are not to be hired and in the twentieth case it is important that you know all that your hired man knows—and then some.

Don't go into the poultry business on any different basis than you would go into any other business. Remember—it is a business. Therefore, plan to apply common sense business principles, business management, business financing and business book-keeping. Fix your mind on some definite goal before you start. Plan each step before you take it, have a common sense "general average" reason for whatever you do or hire somebody else to do—then drive straight ahead, be of good courage, count on your share of mistakes and you will win out, nine times in ten. The poultry business is full of good chances for men and women who are well located, who have a fondness for the work, who will apply themselves earnestly and who have the right stuff in them to command success.

Don't rely on amazing figures furnished by Tom, Dick and Harry, meaning persons who have never been in the poultry business but who are going into it "some time." Fabulous sums are made "on paper" by these day-dreamers, but nowhere else. Consult reliable authorities—follow in the footsteps of men and women who actually have succeeded. They know how they did it—they can tell you, and the fraternal spirit in the poultry business is very strong. This means that the leading successful poultry men and women of the country are willing to tell you. Make your own figures, starting small and working up. Be sure to see what you can do before getting in too deep. Know your costs, know your profits. Know each detail of the enterprise as you run it, then compare your work with that of others, in order to see where you can improve, where you can save, where you can expand. Do you know any better way than this of starting in business or running one? We do not.

Don't build a fancy poultry plant and trust to luck to stock it afterwards. In other words, don't spend all your money on poultry buildings, then find that you haven't enough to stock the plant and operate it properly. Remember that the most important part of your poultry plant is the stock—the fowls themselves. Next comes your equipment —the tools with which you are to work. You need suitable buildings, but erect them one at a time, cutting your garment according to your cloth—measuring your whole enterprise by the contents of your purse or by your assured income. Keep out of debt—Keep ahead of the demands on your financial strength. To get into debt is to court failure. Chickens must eat—this means food bills. First, consider the stock you need—what the breeders will cost, or the hatching eggs or the day-old chicks. Next, consider the equipment you must have in order to take proper care of the fowls, the eggs or the chicks. Lastly, plan your poultry buildings or plant and build your houses to suit your stock and your equipment—also your pocket-book.

Don't put your money into fancy or needlessly expensive buildings. Make them substantial, but have them as economical as you can. Don't waste money on any excuse.

Remember that your birds and the equipment are the items that yield the profits of the business. The birds must be standard-bred and full of vigor, and the equipment should be of the best. By equipment we mean incubating and brooding devices—as a matter of course—also handy, labor-saving appliances and standard poultry supplies, the best article in each case for the purpose.

Don't go into the poultry business without knowing what you are going to produce—what you are going to have for sale and to whom you are going to sell it. You have no license to call your enterprise a business unless you know those things. This "don't" also is a big one. Think about it, reason it out—know what you are trying to do, and how, and why. It would be time, money and labor wasted to produce milk-fed broilers or prime roasters or extra select eggs in the centre of the Desert of Sahara. Locate your market, find out what it wants—then produce this article. Furthermore, plan, study, and work to produce a high-class article— something that will obtain for you the top prices. These prices, nine times in ten, cover the larger profits—and it is profits you are after. Without profits your poultry enterprise will be a pastime or a joke—not a business.

Don't be too prone to blame someone else when things go wrong. If your stock does not turn out as you want it to, or if your incubator does not work right, or if the chicks do not grow as well as you think they should, search for the cause and remove it, rather than to lose valuable time trying to find someone on whom to fix the blame. Employ honest, sober, industrious help; treat your workers right, then rely on earnest, faithful service. As a rule you will get what you are entitled to—in case you do your part. If the fowls or eggs or goods you buy are unsatisfactory, or fail to work right in your hands, write the poultrymen or manufacturers frankly, reasonably and decently, asking for their valuable help and advice. Remember that a chronic kicker usually hurts his own toes more than he hurts anything else.

Don't overcrowd your chicks. They are living organisms and need room and air to thrive. Overcrowding is dear economy. Take this golden advice from us. Why test it, at heavy cost?

Don't fail to remember that fresh air and plenty of it is vitally necessary to all animal and bird life—chickens included. This does not mean that you are to supply it in the form of drafts. Night drafts are fatal to fowls and chicks alike.

Don't fail to supply your fowls and chicks with dry quarters—in the houses and brooders. Damp walls and musty litter have caused the death of many valuable adult fowls and of untold thousands of little chicks. Dryness in the poultry house, likewise in the brooder or brooding pen, is one of the essentials to success in poultry raising. Of this you have no doubt. Do not test it—please take our word for it.

Don't fail to keep the chicks and layers alive, clean and happy. They are like people—they do their best work under pleasant and healthful conditions. Filth in the poultry house or brooder is the hot-bed of disease germs. You are to run a successful poultry plant, not a propagating station for destructive poultry pests.

Don't use inferior, musty or waste-product for your poultry,—either adult fowl or chicks, and especially the latter. Musty food is fatal to young chicks and cannot benefit the old fowls. Sound, wholesome food is necessary to their well-being. Better keep fewer fowls and raise fewer chicks than to have to resort to non-nutritious or unwholesome foods. To do this is to waste time and money and you also endanger the health—the lives—of your fowls and chicks.

Don't expect record egg yields from old hens—hens three to five years old. Pullets are the best layers. The high productive period of a pullet-hen, as regards egg yield, is from six months to eighteen months old. At the beginning of the second moult sell the eighteen-months-old hens, if you are breeding for market purposes, and replace them with pullets. A pullet hen ranging in age from six to eighteen months will lay, on the average, four to five dozen more eggs in twelve months than will a two or three-year-old hen. If eggs are what you want, go after them—plan for them.

Don't fail to keep your poultry plant and all equipment in a sanitary condition. Contagious diseases are responsible for more direct loss in poultrydom than any other cause. See Bulletin No. 21 of this series. Remember that filth breeds disease—any form of filth. The lazy plan of removing the droppings "once every month or two," for example, is fraught with danger. Many disease germs thrive in droppings. Therefore get rid of the droppings often—and regularly. Remember, too, that sunshine is a great purifier, if not an actual germ killer. Use standard disinfectants and apply the white-wash brush for both cleanliness and cheerfulness. Full and explicit directions are given in "Cyphers Company Service" Bulletin No. 3. Clean the nursery compartments of the brooder daily and air thoroughly. This may be the price of your success.

Don't get lax when things are going well. That is just the time to be keenest—most alert. When you have gotten things well under way, keep them going. Poultry failures, partial or total, often are due to set-backs that easily could have been avoided.

Don't expect profitable winter egg yields unless you en-enforce exercise and supply animal and green food in the proper form and quantities. These are the articles of food that the hen finds in the spring and summer, when she lays naturally and bountifully. Supply them in winter and your chances of a heavy egg-yield will be greatly enhanced. If given proper food, in well-built houses—houses that are clean and dry—the average well-matured pullet will lay eggs in reasonable numbers when the thermometer ranges from the freezing point down as low as zero, but your hens "cannot make brick without straw." In other words, they must have the proper food— and in sufficient quantities.

Don't expect to continue in the poultry business without being able to hatch and successfully rear your chicks. It should be perfectly plain that one of the corner stones to success in this field of effort is the ability to hatch and raise the right percentage of chicks—to hatch "the kind with the kick in them"—the kind that will grow steadily, rapidly and develop into "prime quality", whether they are to be used as breeders, as layers or are to be killed and marketed.

Don't expect livable chicks without vigorous breeding stock. Like begets like. Only birds of a vigorous constitution should be allowed in the breeding pens.

Don't forget to cull. Kill every weakling in sight. Take no chances in this matter. Lack of constitution among the breeders is the rock upon which many a poultryman has met failure. Good looks and "fine points" are not enough—your breeders must have healthy, vigorous bodies and productive organs.

Don't use or rely upon poor tools with which to work. Whether it is the stock, the incubator, the brooder or any of the other articles that go to make up the equipment, remember that the best is the cheapest in the end. One cannot afford to buy anything simply because it is low-priced. Buy fewer or smaller things, but what money you have to invest, put it into something good, something dependable, something that will do the work required of it and do it at a profit. A good article will give satisfaction as long as it lasts, but a cheap article is only a make-shift and will cause trouble and expense until thrown away.

Don't fail to follow instructions in running your incubator. Too many beginners seem to think that they know just how an incubator should be run. With about the second hatch they begin to try out their own ideas. You will find out sooner or later—so please take our word for it now—that the manufacturer of the machine is very likely to know more about how to run his make of machine than the average person who operates it for the first time, or the first several times. It is much safer, therefore, to follow closely the instructions sent out with the machine.

Don't put eggs into the incubator when it is first started. Run it for a day or two to make sure that nothing has happened to it on the way to you and that you understand the directions that came with it. When you get the regulator properly adjusted and the heat running uniformly, then is time enough to supply the eggs. And now re-read the directions paragraph by paragraph. Look carefully for the points you overlooked on the first reading.

Don't expect strong chicks from poor eggs. To get good hatches of strong vigorous chicks the eggs must come from breeding stock having strong and vigorous constitutions. The breeding pens must be properly mated and the eggs carefully kept until put into the incubator. If a poor hatch is obtained, be sure that the breeding stock and care of eggs are right before blaming the incubator for the trouble. The machine may be at fault, but remember that it cannot produce good chicks from poor eggs—nor big hatches.

Don't handle the eggs or incubator roughly. During the first week especially, be careful not to jar the eggs as they are being handled. Do not throw your hat or coat on top of the machine. They may interfere with the regulator and cause the heat to go too high or too low.

Don't forget the lamp. This means in both the incubator and the brooder. Keep it clean and change the wick before there is any danger of it becoming too short. An occasional new burner also is a safe investment.

Don't fail to have the brooder ready. Have it cleaned and warm, ready for the chicks as they come from the incubator. Have the heat under the hover the same as in the nursery drawer, or about 95 degrees.

Don't pamper the chicks. Chicks are like babies—to the extent that sleep and heat are essential to their well being. See that they get plenty of heat and leave them alone under the hover when they are resting quietly. Do not coax them out just to see them and do not feed them merely to be sure they know how to eat. They will learn soon enough.

Don't feed too much. More little chicks are killed from over-feeding than under-feeding. Feed a little at a time and often. Feed dry feed as far as practical feed in such a manner that the chicks will be compelled to take exercise in getting it.. See "Cyphers Company Service" Bulletin No. 10, entitled, "Proper Feeding of Chicks;" also Bulletin No. 2., entitled "Dry Feeding by the Hopper Method,."

Don't fail to provide sun and shade. Give the sun to the young chicks early in the season. Later, when it is warm, provide plenty of shade. The hot sun is hard on chicks and shade must be supplied. Trees and bushes make the best shade, but if they are not present, provide the shade in some other way, but be sure to provide it.

If the reading list of "don'ts" has dampened your ardour a bit, don't get discouraged. The purpose of this bulletin is to make you stop and think and reason. When you have thoroughly digested these "don'ts" you will find there is nothing very terrible about them and your enthusiasm will return and be based on a firmer foundation. Remember, that of all things, enthusiasm—intelligent and well-directed enthusiasm—is the vital power that moves the world. It should be your most valuable business asset, when directed by plain, every-day common sense.

AN ACT TO ENCOURAGE POULTRY BREEDING BY THE FORMATION OF THE NOVA SCOTIA POULTRY ASSOCIATION.

(Passed the 13th day of May, A. D., 1913.)

Be it enacted by the Governor, Council, and Assembly, as follows:—

1. The following persons and their successors duly appointed are hereby constituted a body corporate under the name of "The Nova Scotia Poultry Association."

(3) Delegates or representative members who shall be chosen as follows:

(a) one delegate or representative member from each Poultry Club in the Province, having a membership of fifty members or less, and one additional representative or delegate for each additional fifty members of such Poultry Club duly organized under the Nova Scotia Poultry Association;

(b) ordinary members, who shall be elected in such manner and hold membership on such terms as are provided by the by-laws of the Association.

2. The Secretary of Agriculture, the Principal of the Agricultural College and the Superintendent of the Poultry Department of the Agricultural College shall be *ex officio* members of the Association and shall, whenever practicable, attend the various meetings and shall assist in promoting the objects of the Association, but shall not have the right to vote at any such meetings.

3. The special objects of the Association shall be

(a) to enable poultry breeders and those interested in poultry breeding to confer together for the interchange of information with a view to united action in matters relating to the progress and welfare of poultry and pet stock breeding in the Province.

(b) to encourage the holding of Poultry and Pet Stock shows in various parts of the Province.

4. The affairs of the Association shall be managed by the Executive Committee of such number and with such officers as are fixed by the by-laws of the Association. The Secretary for Agriculture, the Principal of the Agricultural College and the Superintendent of the Poultry Department at the Agricultural College shall be *ex officio* members of the Executive Committee, but shall not vote at any of its meetings.

5. No by-law of the Association or amendment thereof shall have any effect until the same has been transmitted to and received the sanction of the Governor-in-Council.

6. The Association shall hold meetings at such times and places as are fixed by the Association or the Executive Committee, and such other meetings as they find necessary or expedient.

7. The Association may, subject to the approval of the Secretary of Agriculture, organize in any city, town, county, municipal district or such other locality as may be approved by the Secretary for Agriculture a branch club to be known as "The——————————————— Poultry Club" for the purpose of assisting and co-operating with the Association in carrying out its purposes.

8. The Association may, subject to the approval of the Governor-in-Council, make rules and regulations for the organization and for the direction of the work of such Poultry Club.

9. (1) The Association or its Executive Committee shall annually submit to the Secretary for Agriculture for publication in the Annual Report for the Secretary for Agriculture, a report of its proceedings during the year and a statement of its receipts and expenditures.

(2) The Secretary of each Poultry Club shall also annually submit to the Secretary for Agriculture for publication in the annual report of the Secretary, a report of the proceedings during the year and a statement of its receipts and expenditures.

10. The Governor-in-Council may annually grant for the use of the Association such amount as is found necessary for the purposes thereof, not exceeding in any one year two thousand dollars.

11. (1) Out of this grant the Association may use an amount not exceeding $100.00, to be used to defray part of the expenses of meetings of this Association or of the Executive Committee of the Association.

(2) The balance may be paid upon recommendation of the Executive Committee of the Association to Poultry Clubs organized by the Association for the purpose of

assisting such clubs to hold local Poultry Shows or to carry on such other work as may be approved by the Provincial Association for purposes of promoting the poultry industry.

(3) The grant which may be allotted to a Poultry Club or Clubs in any one county shall be two-thirds of the prize money paid at a Poultry Show or Shows held by a club or clubs, or expended in carrying on work approved by the Provincial Association within the county. But in no case shall the appropriation in any one county exceed one hundred dollars.

(4) Where only one club exists in a county, the total appropriation for the county shall be available for the use of that club. Where more than one club exists in a county, the grant shall be divided upon a basis of prize money actually paid out or expenditures actually incurred in carrying on work approved by the Provincial Association.

12. The Council of any city, town or municipality, in which a branch club has been organized, may notwithstanding anything contained in "The Municipal Act" or amendments thereto, vote and pay to any such club a sum of money to be used for the purposes of any poultry show promoted by such club.

13. The Governor-in-Council may expend an additional sum not exceeding five hundred dollars annually, in paying the expenses of judges and instructors at poultry shows, meetings and such other occasions as may be held or arranged for under the Provisions of this Act, and also to pay the cost of such equipment and apparatus as the Secretary for Agriculture may deem necessary for promoting the work of the Poultry Association.

DIRECTORY OF BREEDERS OF POULTRY IN NOVA SCOTIA.

In compiling this Directory of Breeders of Poultry, a circular letter was mailed to all persons who were known to have exhibited Poultry at the Fall Exhibitions and Winter Poultry Shows, requesting the names of the breeds and varieties which they are keeping. This list does not contain all the Breeders of Poultry in the Province, but is included herewith, in order to assist all persons who wish to know where stock or eggs may be had for breeding purposes.

ANDALUSIANS.

Campbell, Thos.	Trenton, N. S.
Douglas, A. P.	New Glasgow, N. S.
Latham, Thos.	Sylvester, N. S.
McCallum, Fraser	Westville, N. S.

ANCONAS.

Burgoyne, Walter	Windsor, N. S.
Brodie, D. N.	Glace Bay, N. S.
Fraser, Daniel	Stellarton, N. S.
Hull, H. H.	Stellarton, N. S.
King, Rolland	Oxford, N. S.
Lovett, W. H.	Leitche's Creek, N. S.
McDonald, Neil	Glace Bay, N. S.
Quinn, Thos. W.	Liverpool N. S.
Ross, M. W. & Sons	Sydney Mines, N. S.
Simmons, C. W.	Bridgewater, N. S.
Simmons, J. W.	Bridgewater, N. S.
Webster, J. R.	Kentville, N. S.

BRAHMAS.

Light.

Bailey, James	Bridgewater, N. S.
Burnham, Ernest	Digby, N. S.
Griffin, E. C.	Port Williams, N. S.
Goldsmith, Mrs. W. H.	Pictou, N. S.
Graham, John W.	New Glasgow, N. S.
Keddy, A. J.	Dartmouth, N. S.
Leithead, Henry	Lyon's Brook, N. S.
Morrell, Calvin	Brooklyn, Yar. Co., N. S.
Murphy Bros.	Port Williams, N. S.
Nickerson, Chas. W.	Halifax, N. S.
Spencer, Bruce	Wolfville, N. S.
Wisener, C. H.	Pictou, N. S.
Webster, Chas. S.	"Fruit-hill Farm" Cambridge Station N. S.

BRAHMAS.

Dark.

Leithead, Henry	Lyon's Brook, N. S.
McEachern, Douglad	Antigonish, N. S.

DORKINGS.

Silver Gray.

McConnell, James	Antigonish, N. S.

GAME.

Black Breasted Red.

Lathan, Thos.	Sylvester, N. S.
Graham, John W.	New Glasgow, N. S.

CORNISH INDIAN.

Griffin, E. C.	Port, Williams, N. S.
Morine, Robie	Church Street, N. S.

SILVER DUCKWING.

Graham, John W.	New Glasgow, N. S.

HAMBURGS.

Black.

Dalton, Chas.	Church Street, N. S.

SILVER SPANGLED.

Allen, Vernon	Pembroke, N. S.
Bath, Frank	Granville, N. S.
Blanchard, James	Up. Dyke Village, N. S
Dalton, Chas.	Church Street, N. S.

HOUDANS.

Anderson, Mary	Windsor, N. S.
Armstrong, E. J.	Church Street, N. S.
Gruno, Mrs. J. M.	Newport, N. S.
Lyons, J.	Kentville, N. S.
McGillivray, John D.	Georgeville, N. S.
O'Brien, George	Windsor Forks, N. S
Stead, Frank	Kentville, N. S.
Wade, F. E.	Kentville, N. S.

LANGSHANS.

Dalton, Chas.	Church Street, N. S.
Gass, Robt.	Shubenacadie, N. S.
Jenkins, Harry	New Glasgow, N. S.
Morine, Robie	Church Street, N. S.
Salter, Mrs. R.	Nappan Station, N. S.

LEGHORNS.

Single Comb White.

Alders, E. W.	Falmouth, N. S.
Anderson, Rea.	Windsor, N. S.
Agricultural College (Poultry Dept)	Truro, N. S.
Bremner, W. F. D.	Falmouth, N. S.
Beazley, Wm.	10 Summit St., Halifax, N. S.
Baker, Raymond	North Brookfield, N. S.
Blanchard, James	Upper Dyke Village, N. S.
Baker, J. A.	Barronsfield, N. S.
Brown, E. S.	Pictou, N. S.
Cain, Dr. H. W.	Falmouth, N. S.
Chapelle, Mr.	"Sea Side Park," Harborville, N. S.
Critcher, Mrs. S. W.	Yarmouth, N. S.
Carnell, Jos.	Stewiacke, N. S.
Cross Fertilizer Co.	Sydney, N. S.
Crosby, J. C.	S. S. Harbor, Ant. Co.
Dixon, Herbert	North Brookfield, N. S.
Experimental Farm	Nappan, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Experimental Station	Kentville N. S.
Flemming, H. R.	Stellarton, N. S.
Fleming, James	Stellarton, N. S.
Fraser, Mrs. Jas. T.	New Glasgow, N. S.
Griffin, A. M.	Onslow, N. S.
Gass, Robert	Shubenacadie, N. S.
Goldsmith, Mrs. W. H.	Pictou, N. S.
Graham, John W.	New Glasgow, N. S.
Hall, E. H.	Shubenacadie, N. S.
Hassett Poultry Yard	Weymouth, N. S.
Holman, Prescott	Mid. Musquodoboit, N. S.

LEGHORNS.

Single Comb White.

Harlow, Ralph	North Brookfield, N. S.
Johnson, Chas.	North Sydney, N. S.
King, Rolland	Oxford, N. S.
Keddy, A. J.	Dartmouth, N. S.
Leithead, Henry	Lyon's Brook, N. S.
Latham, Thos.	Sylvester, N. S.
McNeil, Bernard	Burton, N. S.
McKenzie, Howard	Stellarton, N. S.
McEachern, Dougald	Antigonish, N. S.
McNutt, Warn	Conn's Mills, N. S.
McNaughton, James	Hopewell, N. S.
McDonald, Samuel	Windsor, N. S.
McDonald, Malcolm	Glace Bay, N. S.
McCully, Geo. W.	Windsor, N. S.
Pearson, George	Springhill, N. S.
Spidle, Chas.	Bridgewater, N. S.
Stronach, A. A. G.	Antigonish, N. S.

LEGHORNS.

S. C. White.

Turnbull, Osborne	Digby, N. S.
Turnbull Bros.	Digby, N. S.
Thompson, John R.	Antigonish, N. S.
VanBlarcom, W. E.	Digby, N. S.
VanAmburg, R. T.	Oxford, N. S.
Wolfville Poultry Yards	Wolfville, N. S.
Watkins, Chas. G.	Church Street, N. S.
Watkins, Hugh	Church Street, N. S.
Watkins, Mrs. M. E.	Church Street, N. S.

LEGHORNS.

R. C. White.

Latham, Thos.	Sylvester, N. S.

LEGHORNS.

Single Comb Brown.

Anderson, Miss Myrtle	Windsor, N. S.
Agricultural College (Poultry Dept)	Truro, N. S.
Bowers, W. D.	Shubenacadie, N. S.
Brown, Peter	Wallace Bay, N. S.
Blanchard, James	Up. Dyke Village, N. S.
Cook, Robert H.	Bridgewater, N. S.
Chisholm, Rod.	S. S. Harbor, Ant. Co.
Fraser, Mrs. James T.	New Glasgow, N. S.
Frame, Geo. A.	Shubenacadie, N. S.
Fleming, Jas. W.	Stellarton, N. S.
Gass, Robert	Shubenacadie, N. S.
Graham, John W.	New Glasgow, N. S.
Hull, H. H.	Glace Bay, N. S.
Hall, H. E.	Shubenacadie, N. S.
Johnston, Charles	North Sydney, N. S.
Kirk, Adam	Clydesdale, N. S.
Keith, Don	Stellarton, N. S.
Latham, Thos.	Sylvester, N. S.
Lavers, Rupert J.	Windsor, N. S.
Lovett, H. W.	Leitche's Creek, N. S.
Leithead, Henry	Lyon's Brook, N. S.
Minard, Zoeth F.	Harmony, N. S.
Morine, Robie	Church Street, N. S.
McKinnon, W.	Glace Bay, N. S.
McLeod, Wm.	Glace Bay, N. S.
O'Rouke, Amos	Springhill, N. S.
Patriquin, C. A.	Wolfville, N. S.
Pushie, Sydney	Antigonish, N. S.
Smith, Elton B.	Caledonia, N. S.

Wentzell, Lloyd	New Germany, N. S.
Wentzell, Abner	Riversdale, N. S.
Watkins, Chas. G.	Church Street, N. S.
Webster, J. R.	Kentville, N. S.
Watkins, Hugh	Kentville, N. S.
Williams, Melbourne	Kentville, N. S.
Wolfville Poultry Yards	Wolfville, N. S.
Watkins, Mrs. M. E.	Church Street, N. S.
Williams, J. W.	Wolfville, N. S.

LEGHORNS.

Buff.

Armstrong, E. J.	Church Street, N. S.
Agricultural College (Poultry Dept)	Truro, N. S.
Brodie, D. M.	Glace Bay, N. S.
Blanchard, James	Upper Dyke Village, N. S.
Hall, E. H.	Shubenacadie, N. S.
Haley, Edward	Antigonish, N. S.
Latham, Thos.	Sylvester, N. S.
Lawrence, Hibbert	Nappan Station, N. S.
Osborne, W. W.	New Glasgow, N. S.
Parker, A. T.	Shubenacadie, N. S.
Simpson, Ira	Oxford, N. S.

MINORCAS.

Black.

Aalders, E. W.	Falmouth, N. S.
Chalmers, David	West New Annan, N. S.
Duthie, Muir	New Glasgow, N. S.
Davison, Mrs.	Bible Hill, Truro, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Fleming, Jas. W.	Stellarton, N. S.
Fraser, John B.	Pictou, N. S.
Fraser, Geo.	New Glasgow, N. S.
Gibson, Fred	Kentville, N. S.
Joudrey, Albert	Pine Grove, N. S.
Kirk, Adam	Antigonish, N. S.
Morine, Robie	Church Street, N. S.
Milestone, Mr.	Yarmouth North, N. S.
McKenzie, Howard	Box 234, Stellarton, N. S.
McDonald, Joseph, Jr.	East End, Antigonish, N. S.
MacEachern, Dougald	Antigonish, N. S.
McIsaac, Willie	Antigonish, N. S.

MINORCAS.

Black.

McNeil, Bernark	Burton, N. S.
Ross, M. W. & Sons	Sydney Mines, N. S.
Smith, Rev, J. M.	Yarmouth North, N. S.
Sears, Gerald	Antigonish, N. S.
Tupper, Fred	Canning, N. S.
Wolfville Poultry Yards	Wolfville, N. S.
Wilson, Fred	Central New Annan, N. S.
Williams, J. W.	Wolfville, N. S.

MINORCAS.

White.

Hebb, A. W.	Bridgewater, N. S.
Ross, M. W. & Sons	Sydney Mines, N. S.
Tracey, E. S.	Halifax, N. S.

ORPINGTONS.

Black.

Bouanfaut, Wm.	Weymouth, N. S.
Gass, Robt.	Shubenacadie, N. S.
Hogg, E. C.	Barrington, N. S.
Muir, Dr. C. W.	Shelburne, N. S.
Simpson, Thos.	Stellarton, N. S.
Urquhart, John	Oxford, N. S.
Walker, Geo.	Lower Truro, N. S.
Wisener, C. H.	Pictou, N. S.

ORPINGTONS.

Buff.

Anderson, Rea.	Windsor, N. S.
Brown, E. S.	Pictou, N. S.
Black, R. R.	Amherst, N. S.
Carmichael, W. C.	Glace Bay, N. S.
Douglas, J. W.	Caledonia, N. S.
Davison, Wiley	Windsor, N. S.
Dakeyne Farm	Falmouth, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Graham, John	New Glasgow, N. S.
Goudge, Harry	Windsor St. Halifax, N. S.
Gibson, Fred	Kentville, N. S.
Hamilton, R. C.	Inverness, N. S.

Johnston, E. K.	West New Annan, N. S.
McNamara, Wm.	Windsor, N. S.
McCallum, Cook	Lyon's Brook, N. S.
Maxwell, W. F.	Glace Bay
Osborne, Wimburne Glenn	Oakfield, N. S.
Osborne, Jas. W.	Glace Bay, N. S.
Palfrey, F. G.	Lawrencetown, N. S.
Pothier, Mrs. Eugene	Yarmouth, N. S.
Parker, Welsford R.	Falmouth, N. S.
Palmer, Herbert	Oakfield, N. S.
Pearce Bros.	Waterville, N. S.
Retson, Geo.	Truro, N. S.
Strong, C. H.	Bridgetown, N. S.
Sears, Gerald	Antigonish, N. S.
Tracey, E. S.	Halifax, N. S.
Wile, Mrs. Wm.	Bridgewater, N. S.

ORPINGTONS.

White.

Anderson, Miss Myrtle	Windsor, N. S.
Allan, A. W.	Yarmouth North, N. S.
Black, Hiram	Clairmont, N. S.
Fraser, Wm.	Antigonish, N. S.
Fraser, Duncan	Antigonish, N. S.
Fox, Geo. A.	Springhill, N. S.
Haley, Edward	Antigonish, N. S.
Hunter, Seldon	Springhill, N. S.
Isenor, Wm. E.	Oakfield, N. S.
Larder, Hugh	Glace Bay, N. S.
Muir, Dr. C. W.	Shelburne, N. S.
McCully, Geo. W.	Windsor, N. S.
Pickles, Fred	Hebron, N. S.
Pierce Bros.	New Mines, N. S.
Retson, John	Truro, N. S.
Ripley, Carl	Nappan, N. S.
Weatherspoon, Robert	Lower Truro, N. S.
White, Frank	New Glasgow, N. S.

Blue.

Waugh, N.	12 Edinburgh St., Halifax, N. S.
Wilson, George	Windsor, N. S.

PLYMOUTH ROCKS.

Barred.

Anthony, Mark	Shubenacadie, N. S.
Aylward, Thos.	Falmouth, N. S.
Atkinson, Jos.	Lakeville, N. S.
Amico, Mrs. Reuben	Yarmouth, N. S.
Agricultural College (Poultry Dept.)	Truro, N. S.

Bailey, Jas.	Bridgewater, N. S.
Barret, Thos.	Westville, N. S.
Brule, Mrs. R.	Springhill, N. S.
Baker, J. A.	Barronsfield, N. S.
Brophy, James	South River, N. S.
Blenkhorn, Mrs. F.	Nappan, N. S.
Bird, Creighton	Nappan, N. S.
Brady, Miss Margaret	Woodside, N. S.
Craig Bros.	Amherst, N. S.
Cross Fertilizer Co	Sydney, N. S.
Carey, Percy	Yarmouth, N. S.
Clarke, W. G.	Bear River, N. S.
Clarke, Bernard	Bear River, N. S.
Cossett, Frank	Smith's Cove, N. S.
Crouse, W. A.	Bridgewater, N. S.
Chris, Mrs. D.	McNeiley's, N. S.
Carter, Gordon	33 Jubilee Road, Halifax, N. S.
Churchill, Mrs. Fred W.	Overton, N. S.
Corning, Mrs. John	Chegoggin, N. S.
Cook, Caleb	Chebogue, N. S.
Chisholm, Roderick	Lr. So. River, N. S.
Carter, James	So. River Rd, Antigonish Co, N. S.
Chisholm, William	North River, Ant. Co., N. S.
Cook, Mrs. Jas. R.	Yarmouth, N. S.
Crowell, Rev. W. B.	Arcadia, N. S.
Coffin, E. A.	Hantsport, N. S.
Carmichael, C.	Glace Bay, N. S.
Cunningham, G.	Glace Bay, N. S.
Cook, G. L.	Yarmouth, N. S.
Cox, J. Howe	Cambridge Station, N. S.
Cusack, E. J.	Truro, N. S.
Dewis, Mrs. Albert	Shubenacadie, N. S.
Demings, Alex.	Conn's Mills, N. S.
Duncanson, Earl W.	Gaspereaux, N. S.
Dalton, Charles	Church Street, N. S.
Dunphy, Jas.	Antigonish, N. S.
Experimental Farm	Nappan, N. S.
Etheredge, Howard	Purlbrook, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Experimental Station	Kentville, N. S.
Frame, Frank	Gay's River, N. S.
Freeman, W. P.	New Grafton, N. S.
Ferguson, A. M.	New Glasgow, N. S.
Faulkner, Absolem	Port Williams, N. S.
Frame, Geo. A.	Shubenacadie, N. S.
Fraser, Duncan	Lr. So. River, N. S.
Fraser, Roderick	Glengarry Station, N. S.
Freeman, M. U.	Kempt, N. S.
Fisher, J. W.	Hantsport, N. S.
Fanning, Wm.	Amherst, N. S.
Fleck, Marshall	M. Stewiacke, N. S.
Grant, John	Briley's Brook, N. S.
Gardner, G. S.	Dominion No. 6, N. S.
Hamilton, R. C.	Inverness, N. S.
Hunter, Seldon	Springhill, N. S.
Harvey, Dan	Kentville, N. S.
Harris, Mrs. Chas.	Prince Albert, N. S.
Hoase, Karl	Glace Bay, N. S.
Harvey, W. H.	Kentville, N. S.

Ibson, Fred	10 Summit St, Dartmouth, N. S.
Innis, Freeman	New Glasgow, N. S.
Jordan, Edward	Kentville, N. S.
Jeffrey, Mrs. Alvin	Yarmouth, N. S.
Kirkpatrick, Jean	Shubenacadie, N. S.
Kell, Neil	South River Road, N. S.
Keddy, J. A.	Dartmouth, N. S.
Lawrence, Frank	Falmouth, N. S.
Lowther, J. W.	Nappan Station, N. S.
Lynch, Mrs. Wm.	Kempt Town, N. S.
Landry, Geo. H.	Lr. So. River, N. S.
Lattie, G. W.	River Herbert, N. S.
Latham, Thos.	Sylvester, N. S.
Muir, Dr. C. W.	Shelburne, N. S.
Martin, R. G.	Westville, N. S.
Moss, Sam	Westville, N. S.
Miller, Ross B.	Mount Hanley, N. S.
Maxwell, J. W.	New Aberdeen, N. S.
Muise, Mrs. W. J.	Yarmouth, N. S.
McQuarrie, D. H.	New Glasgow, N. S.
McDonald, John	Shubenacadie, N. S.
McDonald, Lawrence	Lr. So. River, Antig. Co., N. S.
McDonell, John	McPherson's P. O., N. S.
McIntosh, John	Dunmore, Antig. Co., N. S.
McGregor, George	Up. So. River, N. S.
McKenzie, R. D.	Glace Bay, N. S.
McKenzie, N.	Glace Bay, N. S.
McNeil, S. B.	Glace Bay, N. S.
MacGowan, Mrs. J. E.	Canard, N. S.
Newcombe, D. A.	Newcombeville, Lunen. Co., N. S.
Newcombe, W. B.	Murphy's Cor. Hfx. Co., N. S.
O'Brien, F. W.	Springhill, N. S.
Pipe, H. & Sons	Amherst, N. S.
Pushie, N.	Mulgrave, Guys. Co., N. S.
Palfrey, F. G.	Lawrencetown, N. S.
Palmer, Robie	Windsor Forks, N. S.
Parry, Harry	Yarmouth, N. S.
Rice, Dr. F.	Sandy Cove, Digby Co., N. S.
Read, Emerson	Bear River, N. S.
Ripley, Mrs. G.	Nappan, N. S.
Romans, D.	Glace Bay, N. S.
Rutherford, R. L.	River Herbert, N. S.
Rhyar, R. H.	Sand Beach, N. S.
Smith, Elton B.	Caledonia, Queen's Co., N. S.
Stronach, A. A. G.	Antigonish, N. S.
Simpson, Thos.	Stellarton, N. S.
Servant, Stewart	Overton, Yar. Co., N. S.
Smith, John I.	Falmouth, N. S.
Smith, W. D.	Pictou, N. S.
Semple, J. R.	Brule, Col. Co., N. S.
Smith, J. H.	Windsor, N. S.
Sharpe, Wm.	Windsor, N. S.
Stead, Frank B.	Kentville, N. S.
Smith, Henry	Antigonish, Henry.
Thompson, Morten	Oxford, Cum. Co., N. S.
Taylor, J. G.	Antigonish, N. S.
Trefry, N. L.	Yarmouth, N. S.
Trotter, Fred R.	Antigonish, N. S.

Tully, H. W.	Halifax, N. S.
Tompkins, Rev. M. N.	Antigonish
VanBlarcom, W. E.	Digby, N. S.
Vinten, Wm.	Sylvan Valley, Ant. Co., N. S.
Vooght, W. M.	North Sydney. N. S.
Williams, Melbourne	Kentville, N. S.
Watkins, Hugh	Church Street, N. S.
Williams, Howard	West River, Pic. Co., N. S.
Wilson, George	Windsor, N. S.
Young, Mrs. Wm.	Kentville, N. S.

PLYMOUTH ROCKS.

Buff.

Blanchard, J. R.	Upper Dyke, Kings Co.
Goldsmith, Mrs. W. H.	Box 138, Pictou, N. S.
Simmons, Arthur	Cabot St., Halifax, N. S.
Turner, Rev. W. R.	North Sydney, N. S.
Thompson, Harry	Stellarton, N. S.
Wickwin, F. W.	Kentville, N. S.

PLYMOUTH ROCKS.

White.

Allen, Gilbert P.	Pembroke Shore, N. S.
Anderson, Rea	Windsor, N. S.
Bartes, Mrs. H. P.	Addington Forks, N. S.
Bremner, W. F. D.	Falmouth, N. S.
Baxter, Mrs. Henry	Addington, N. S.
Barrington, John	North Sydney, N. S.
Brady, Miss Margaret	Woodside, N. S.
Cusack, E. J.	Truro, N. S.
Crosby, J. C.	S. S. Harbor, Ant. Co.
Dakeyne Farm	Falmouth, N. S.
Dumphy, Jas.	Antigonish Co.
Etheredge, Howard	Purlbrook, N. S.
Fitch, Freeman	Clarence, N. S.
Fleck, Marshall	Middle Stewiacke, N. S.
Hunter, Edgar	River Philip, N. S.
Hogg, E. C.	Barrington, N. S.
Ives, John F.	New Glasgow, N. S.
Jackson, R. M.	Jacksonville, N. S.
Kirkpatrick, Jean	Shubenacadie, N. S.
Leithead, Henry	Lyon's Brook, N. S.
Lawrence, K.	Windsor, N. S.
Newcombe, D. A.	Newcombeville, N. S.
O'Brien, Geo.	Windsor Forks, N. S.
O'Brien, Wm.	Windsor Forks, N. S.

Ross, Geo. W.	New Glasgow, N. S.
Smith, S. G.	New Glasgow, N. S.
Spidle, Chas.	Bridgewater, N. S.
Thompson, R. S.	Oxford, N. S.
Walsh, Martin Leo	Fairmont, N. S.

PLYMOUTH ROCKS.

Partridge.

Dalton, Chas.	Church Street, N. S
Murphy Bros.	Port Williams N. S.
McConnell, James	Antigonish, N. S.

COLUMBIAN.

Dalton, Chas.	Church Street, N. S.

POLISH.

White Crested Black.

Armstrong, E. J.	Port Williams, N. S.

RED CAPS.

Morine, Robie	Church Street, N. S

LAKEVELDERS.

Armstrong, E. J.	Port Williams, N. S.

BUTTERCUPS.

Fraser, Mrs. Jas. T.	New Glasgow, N. S.

RHODE ISLAND REDS.

Baker, George	Riversdale, N. S.
Brady, Isadore	Canning, N. S.
Bauckman, Wm.	Port Williams, N. S.
Bill, C. R.	Wolfville, N. S.
Barrett, Thos.	Westville, N. S.
Backman, W. D.	Port Williams, N. S.
Brady, Miss Margaret	Woodside, N. S.
Carter, Gordon	33 Jubilee Rd, Halifax, N. S.
Crowe, Mrs. David	Onslow, Col. Co. N. S.
Cameron, D. M.	Elgin, Pic. Co., N. S.
Cock, C. J.	Central New Annan, N. S.
Cain, Dr. H. W.	Falmouth, N. S.
Crowe, Miss Hattie,	Lower Truro, N. S.
Duthie, Muir	New Glasgow, N. S.
Dexter, Arthur	Antigonish, N. S.

RHODE ISLAND RED.

Eisner, Hibbert	Northwest, N. S.
Experimental Station	Kentville, N. S.
Fraser, Daniel	Stellarton, N. S.

Griffin, E. C.	Port Williams, N. S.
Goldsmith, Mrs. W. H.	Box 138, Pictou, N. S.
Graham, John W.	New Glasgow, N. S.
Griffin, A. M.	Onslow, N. S.
Higson, John	Stellarton, N. S.
Hudson, D. G.	New Aberdeen, N. S.
Hannis, W. H.	Pictou, N. S.
Henry, W. H.	Shubenacadie, N. S.
Jenkins, Wentworth	Chebogue, N. S.
Kempton, Fred	Kempt, N. S.
King, Levi	Truro, N. S.
Keddy, A. J.	Dartmouth, N. S.
Lovett, H. W.	Leitche's Creek, N. S.
Lovett, C. W.	North Sydney, N. S.
Munn, T. C.	Leitche's Creek, N. S.
Musgrave, Geo.	Leitche's Creek, N. S.
Murphy, A. G.	Port Williams, N. S.
Minard, Z. F.	Caledonia, N. S.
Meagher, Wm.	Caledonia, N. S.
Meek, John N.	Centre Rawdon, N. S.
Mosher, George	Sweet's Corner, N. S.
Murphy Bros	Port Williams, N. S.
Muse, Mrs. Joshua	Yarmouth, N. S.
Morine, Robie	Church Street, N. S.
McCallum, Fraser	Westville, N. S.
McNeil, Mrs. John	Cloverville, N. S.
MacKay, J. F.	Upper Northfield, N. S.
McDonald, Malcolm	Glace Bay, N. S.
McKenzie, Alexander	Stellarton, N. S.
McKay, C. R.	Pictou, N. S.
Nelson, Arthur	Hartford, N. S.
Newcombe, Robert	Port Williams, N. S.
Newcombe, Fowler	Port Williams, N. S.
Pickles, Fred	Hebron, N. S.
Quinn, Thos. W.	Liverpool, N. S.
Retson, Wm.	Truro, N. S.
Stead, C. R.	Kentville, N. S.
Sullivan, Dan	Glace Bay, N. S.
Schafeitlin	Canning, N. S.
Simpson, Thos.	Stellarton N. S.
Smith, A. W.	Windsor, N. S.
Tracey, E. S.	Woodill St., Halifax, N. S.
Urquhart, Otis	Stellarton, N. S.
Urquhart, John	Oxford, N. S.
Urquhart, Alex.	Stellarton, N. S.
Vincent, Chas.	West New Annan, N. S.
Wilson, George	Windsor, N. S.
Wisener, C. H.	Pictou, N. S.

CAMPINES.

Silver.

James, McConnell	Antigonish, N. S.
MacKinnon, Ross	Glace Bay.

SPANISH.

Black.

Wentzell, G. C.	Maplewood, N. S.

SHERWOODS.

Smith. A. W.	Windsor, N. S.

SILKIES.

Latham, Thos.	Sylvester, N. S.

WYANDOTTES.

Silver Laced.

Bain, John W.	Pembroke Shore, N. S.
Brown, E. S.	Pictou, N. S.
Rudderham, F. H.	North Sydney, N. S.

WYANDOTTES.

Golden Laced.

Barrett, Thos	Westville, N. S.
Brown, E. S.	Pictou, N. S.
Goldsmith, Mrs. W. H.	Pictou, N. S.
McNaughton, Peter	Stellarton, N. S.

WYANDOTTES.

Buff.

Beazley, Wm.	18 Summit St., Halifax, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Leethan, J.	251 North St, Halifax, N. S.
McKinnie, R. D.	Pictou, N. S.
Strong, Chas.	Bridgetown, N. S.

WYANDOTTES.

Columbian.

Dalton, Chas	Church Street, N. S.
Evangeline Poultry Yards	Wolfville, N. S.
Foot, Perry	Lakeville, N. S.
Lyons, J.	Kentville, N. S.
McKay, C. R.	Pictou, N. S.

Smith, Rev. J. M.	Yarmouth, N. S.
Walker, Charles	Bridgewater, N. S.
Williams, J. W.	Wolfville, N. S.
Wolfville Poultry Yards	Wolfville, N. S.

WYANDOTTES.

White.

Adams, Mrs.	Yarmouth, N. S.
Agricultural College (Poultry Dept.)	Truro, N. S.
Allan, A. W.	Yarmouth North, N. S.
Blair, Walter	Brookside, N. S.
Burnham, E. E.	Digby, N. S.
Bacon, W. T.	Digby, N. S.
Baker, Geo. J.	Riverside, N. S.
Bain, John W.	Pembroke, Store, N. S.
Bishop, B.	Williamston, N. S.
Bligh, Rupert	Lakeville, N. S.
Bligh, Howard	Woodville, N. S.
Bonyman, Edward	Central New Annan, N. S.
Black Bros.,	New Glasgow, N. S.
Brady, J. I.	Woodside, Kings Co.
Blanchard, J. R.	Upper Dyke, Kings Co.
Cock, C. J.	Central New Annan, Col. Co
Chase, H.	Truro, N. S.
Cross Fertilizer Co.	Sydney, N. S.
Crowe, Mrs. David	Onslow, N. S.
Crowe, Miss Hattie	Lower Truro, N. S.
Capelle, Mr.	Seaside Park, N. S.
Clarke, Blake	Lakeville, N. S.
Campbell, Wallace	West New Annan, N. S.
Cann, H. H.	Yarmouth North, N. S.
Creelman, G. C.	Yarmouth North, N. S.
Cusack, E. J.	Truro, N. S.
Crosby, J. C.	S. S. Harbor, Ant. Co.
Chisholm, John	S. S. Harbor, Ant. Co.
Chisholm, Rod	S. S. Harbor, Ant. Co.
Dodge, E. H.	Kentville, N. S.
Duthie, Muir	New Glasgow, N. S
Evangeline Poultry Yards	Wolfville, N. S.
Experimental Farm	Nappan Station, N. S.
Experimental Station	Kentville, N. S.
Fraser, Wm.	Antigonish, N. S.
Fraser, Duncan	Antigonish, N. S.
Fraser, Willie	Court St, Antigonish, N. S.
Fraser, Mrs. Jas. T.	New Glasgow, N. S.
Greason, Mr.	Weymouth, N. S.
Griffin, A. M.	Onslow, N. S.
Graves, Clarence	Billtown, N. S.
Hamilton, R. C.	Inverness, N. S.
Hallett, Dr.	Weymouth, N. S.
Hull, Rev. J. D.	Church St., N. S.
Hartlen, John E.	82 Gottingen St., Halifax, N. S.
Harding, Mr.	Yarmouth North, N. S.
Innes, P.	Cold Brook, N. S.
Inson, Fred	10 Summit St., Halifax, N. S.
Ives, John F.	New Glasgow, N. S.

Jordan, E. T.	Kentville, N. S.
Johnson, Cereno	Yarmouth, N. S.
Jackson, F. E.	North Sydney, N. S.
Jackson, Fred.	Jacksonville, N. S.
Johnson, I. S.	Brooklyn, Newport, N. S.
Keddy, A. J.	Dartmouth, N. S.
Mearns, R. W.	Windsor, N. S.
Morash, Aaron	Grand Lake, N. S.
Messenger, R. J.	Lawrencetown, N. S.
Milestone, Mr.	Yarmouth North, N. S.
McCallum, Cook	Lyon's Brook, N S.
McGregor, Dr. S. B.	Smith's Cove, N. S.
McDonald, Thos	West St., Antigonish, N. S.
Newcombe, W. F.	Brooklyn Corner, N. S.
O'Brien, Wm.	Windsor, Forks, N. S.
Pickles, Fred	Hebron, N. S.
Palfrey, F. G.	Lawrencetown, N. S.
Phillips, Noble	Middleton, N. S.
Plant, Warden	Kentville, N. S.
Rooney, James	Kentville, N. S.
Raymond, Maud	Yarmouth North, N. S.
Ross, M. W. & Sons	Sydney Mines, N. S.
Simpson, Mrs. H.	Kentville, N. S.
Sanderson, Isaac	Beaver Brook, Col. Co., N. S.
Strum, Miss Laura J.	Mahone, Bay, N. S.
Strong, Charles	Bridgetown, N. S.
Scott, Mrs. E. S.	Yarmouth, N. S.
Strong, A. C.	Brooklyn, N. S.
Sherman, Mrs. George	Yarmouth North, N. S.
Taylor, J. G.	Antigonish, N. S.
Turner, W. H.	Yarmouth North, N. S.
Taylor, R. S.	Barr's Corner, N. S.
VanAmburg, R. T.	Oxford, N. S.
Wile, Miss Leda	Wileville, N. S.
Wolfville Poultry Yards	Wolfville, N. S.
Walker, Jennie	Yarmouth North, N. S.
Watkins, Mrs. M. E.	Church Street, N. S.
Wisener, C. H.	Pictou, N. S.
Williams, J. W.	Wolfville, N. S.

TURKEYS.

Bronze.

Bremner, W. F. D.	Falmouth, N. S.
Brown, Andrew	Hantsport, N. S.
Bacon, David	Nappan Station, N. S.
Bird, Creighton	Nappan Station, N. S.
Baker, J. A.	Barronsfield, N. S.
Cummings, W. E.	Shubenacadie, N. S.
Cox, J. Howe	Cambridge Station, N. S.
Curry, Archie	Falmouth, N. S.
Fancy, Joseph H.	Kempt, N. S.

Kirk, Henry	Antigonish, N. S.
Leithead, Henry	Lyon's Brook, N. S.

TURKEYS.

White Holland.

Murphy Bros.	Port Williams, N. S.

TURKEYS.

Bronze.

Lockwood, G. A.	Port Williams, N. S.
Lockwood, Arthur	Port Williams, N. S.
Lowther, J. W.	Nappan, N. S.
Leithead, Henry	Lyon's Brook, N. S.
Morine, Robie	Church Street, N. S.
MacGowan, Mrs. J. E.	Canard, N. S.
McNamara, Wm.	Windsor, N. S.
McConnell, Jas.	Antigonish, N. S.
O'Brien, Geo.	Windsor Forks, N. S.
Smith, T. E.	Central Clarence, N. S.
Sharp, Wm.	Windsor, N. S.
Ward, Nathan	South Alton, N S.

DUCKS.

Rouen

Bron, C. C.	Deep Hollow Road, N. S.
Hogan, Kenneth	Church St., N. S.
Jenkins, Wentworth	Chebogue, N. S.
Lockwood, G. A.	Port Williams, N. S.
Lawrence, Hibbert	Nappan Station, N. S.
Leithead, Henry	Lyon's Brook, N. S.
MacGowan, Mrs. J. E.	Canard, N. S.
McDonald, Mrs. A.	Addington Forks, N. S.
McConnell, Jas.	Antigonish, N. S.
O'Brien, Wm.	Windsor Forks, N. S.
Shaw, R. M	Waterville, N. S.
Wile, Leda	Wileville, N. S.

DUCKS.

Pekin.

Agricultural College (Poultry Dept)	Truro, N. S.
Bonner, James	Antigonish, N. S.
Crooker, Leander	South Brookfield, N. S.
Chipman, Russel	Chipman Corner, N S.
Cook, M.	Yarmouth, N. S.
Jenkins, Wentworth	Chebogue, N. S.
Joslyn, James	Antigonish, N. S.

Melvin, Robert	Brooklyn, N. S. (Yar. Co.)
Smith, T. E.	Central Clarence, N. S.
Simmons, C. W.	Bridgewater, N. S.
Simpson, John R.	Stellarton, N. S.
Simpson, Thos	Stellarton, N. S.
Watkins, Mrs. M. E.	Church St., N. S.
Watkins, H. W.	Church St., N. S.

Wild Mallard.

Crosby, J. C.	S. S. Harbor, Ant. Co.
Cox, J. Howe, Cambridge, Kings Co.	

INDIAN RUNNER.

Campbell, Mrs.	Sheffield's Mills, N. S.
Calder, Miss Mary	Falmouth, N. S.
Johnson, I. S.	Newport, N. S.
McNeil, Mrs. John	Cloverville, N. S.
Newcombe, Robert	Canard N. S.
Simpson, Thomas	Stellarton, N. S.

GEESE.

Embden.

Bacon, David	Nappan Station, N. S.
Baker, J. A.	Barronsfield, N. S.
Cock, Arnold	Central New Annan, N. S.
Hebb, George P.	Wileville, N. S.
Moss, Samuel	Westville, N. S.

GEESE.

Toulouse.

Aylward, Thos.	Falmouth, N. S.
Agricultural College (Poultry Dept.)	Truro, N. S.
Barrett, Thos.	Westville, N. S.
Bartes, Mrs. H. P.	Addington Forks, N. S.
Bremner, W. F. D.	Falmouth, N. S.
Baxter, Mrs. Henry	Addington, N. S.
Brady, Miss Margaret	Woodside, N. S.
Brown, John	West Lochabor, Ant. Co.
Churchill, George W.	Chegoggin, N. S.
Crosby, J. C.	S. S. Harbor, Ant. Co.
Dickie, Guss	Kingsport, N. S.
Eagles, W. E.	Gaspereaux, N. S.
Griffin, Edson	Port Williams, N. S.
Hogg, E. C.	Barrington, N. S.
Harrison, William	Glengarry Station, N. S.

Moss, Samuel	Westville, N. S.
McConnell, Jas.	Antigonish, N. S.
McDonald, Collan	James River, N. S.
Newcombe, D. A.	Newcombeville, N. S.
O'Brien, William	Windsor Forks, N. S.
O'Brien, George	Windsor Forks, N. S.

African.

Griffin, E. C.	Port Williams, N. S.
McKay, C. R	Pictou, N. S.
Crosby, J. C.	S. S. Harbor, Ant. Co.

Brown China.

Jenkins, Wentworth	Chebogue, N. S.

Canada Wild.

Crosby, J. C.	S. S. Harbor, Ant. Co., N. S

BANTAMS.

Cochin.

Red.

Lovett, C. W.	North Sydney, N. S.

White.

Armstrong, E. J.	Port Williams, N. S.
Latham, Thos.	Sylvester, N. S.

Buff.

Armstrong, E. J.	Port Williams, N. S
Latham, Thos.	Sylvester, N. S.
Simpson, Thos.	Stellarton, N. S.
Williams, J. W.	Wolfville, N. S.
Wolfville Poultry Yards	Wolfville, N. S.

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